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UDC 547.26'118

ZEMLYANSKIY, N. I., BELOUS, G. F., MURAV'YEV, I. V.

"Interaction of Tetrathiophosphates with Alcohols"

Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 54-55

Abstract: The dipotassium salts of O-alkyltrithiophosphoric acids easily interact with alcohols in the presence of hydrogen chloride with replacement of one sulfohydryl radical by an alkoxyl radical and the formation of asymmetric acid O,O'-dialkyldithiophosphates. In this connection, the capacity of the triethylamine salts of S-alkyl and dialkyltetrathiophosphoric acids to replace sulfalkyl radicals by alkoxyl radicals on their interaction with alcohols and phenols in the presence of hydrogen chloride was proved. The physical constant and results of the analyses are tabulated.

Mixtures of triethylamine salts of butyl and dibutyltetrathiophosphoric acid with ethyl alcohol; triethylamine salt of dibutyltetrathiophosphoric acid with ethyland allyl alcohols; triethylamine salt of diethyltetrathiophosphoric acid with propyl, propargyl alcohols and phenol were also subjected to the conversion. The data show that not only one of the two sulfohydryl radicals of the alkyltetrathiophosphate is easily replaced by an alkoxyl group but also the sulfoalkyl radicals both in the alkyltetrathiophosphate and in the dialkyltetrathiophosphate.

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USSR UDC 547.26'118

GORAK, R. D., ZEMLYANSKIY, N. I., MURAV'YEV, I. V.

"Interaction of Phosphorus Pentaselenide with Alcohols in the Presence of Triethylamine"

Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 56-58

Abstract:Experimental results are presented showing that phosphorus pentaselenide reacts with alcohols in the presence of triethylamine in the ratio 1:4:2 with the formation of O,O-dialkyldiselenophosphates. A mixture of O-alkyltriselenophosphates and O,O'-dialkyldiselenophosphates is formed in the molar ratio of 1:3:3. By alylation of potassium O-alkyltriselenophosphates, the middle esters of O-alkyl-Se,Se'-dialkyltriselenophosphoric acid were obtained. The experimental procedure for obtaining the mentioned compounds and the yields are described.

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MEL'NIK, Ya. I., ZEMLYANSKIY, N. I.

"Method of Production of Symmetrical or Nonsymmetrical O, O, O', O'-Tetra-alkyl-S, S'-Isopropyline Bis-dithiophosphates"

USSR Author's Certificate No 296772, Filed 7/01/70, Published 20/04/71, (Translated from Referativnyy Zhurnal, Khimiya, No 2, 1972, Abstract No 2 N596 P by O. A. Korotkova).

Translation: Dithiophosphates with the general formula $(RO)_2P(S)SCH_2C(=CH_2)$-$SP(S)(OR')_2$ (I) (R and R' are alkyls) are produced by reaction of the corresponding O, O-dialkyldithiophosphoric acid (II) with S-propargyl ester of O, O-dialkyldithiophosphoric acid (III) in the presence of NaOEt (IV) at 95°. Example: 2.24 g III (R' = Et) is heated at 95° for 8 hours with 2.14 g II (R = iso-Pr) in the presence of IV and 3.2 g (73%) I (R = iso-Pr, R' = Et) is separated by the ordinary methods, b.p. 139°/4 10^{-4}, $n^{20}D$ 1.5392, d_4^{20} 1.1732. Similarly, I (R = R' = Et) is produced, b.p. 132°/4 10^{-4}, $n^{20}D$ 1.5509, d_4^{20} 1.2126. I has infecticidal activity.

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UDC 547.26'118.07

MEL'NIK, Ya. I., and ZEMLYANSKIY, N. I.

"A Method of Making Symmetric or Asymmetric 0,0,0',0'-Tetraalkyl-S,S'-iso-propylene-bis-dithiophosphates"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 9, Mar 71, Author's Certificate No 296772, Division C, filed 7 Jan 70, published 2 Mar 71, p 82

Translation: This Author's Certificate introduces: 1. A method of making 0,0,0',0'-tetraalkyl-S,S'-iso-propylene-bis-dithiophosphates. As a distinguishing feature of the patent, 0,0-dialkyldithiophosphoric acid is interacted with S-propargyl ether of 0,0-dialkyldithiophosphoric acid with heating in the presence of an alcoholate of an alkali metal with subsequent isolation of the goal product by conventional methods. 2. A modification of this method distinguished by the fact that heating is done at 95°C. 3. A modification of this method in which sodium ethylate is used as the alcoholate.

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UDC 538.27

SOLOZHENKIN, P. M., ZEMLYANSKIY, N. I., CHERVIN, I. I., and MEL'NIK, Ya. I., Institute of Chemistry, Academy of Sciences Tadzhik SSR, and L'vov State University imeni I. Franko

"Nuclear Magnetic Resonance Spectra of Dithiophosphorus Acids"

Dushanbe, Doklady Akademii Nauk Tadzhikskoy SSR, Vol 14, No 6, 1971, pp 38-42

Abstract: To study the spin-spin coupling of phosphorus with hydrogen, dithiophosphates and dithiophosphinates were investigated with nuclear magnetic resonance (NMR) spectroscopy. High resolution NMR spectra were recorded for potassium dithiophosphates with acetylene and alkyl groups on the Varian HA-100 spectrometer, at a working frequency of 100 MHz. The NMR spectrum of potassium O-O-dipropargyldithiophosphate consists of a triplet of the CH≡group due to spin-spin interaction of this proton with the methylene group, and two doublets of the CH_2 group. The doublets of the CH_2 group are associated by interaction of protons with the phosphorus nucleus via oxygen. In dimethylmonothiophosphate, the CH_3 group, under the influence of the P^{31} atom, is split into the doublet $J_{CH_3-P31} = 12$ Hz. The NMR spectrum of potassium O-O-dicrotyldithiophosphate consists of the CH_3 doublet, the multiplet of the CH = CH, and the doublet CH_2O, whose

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SOLOZHENKIN, P. M., et al., Doklady Akademii Nauk Tadzhikskoy SSR, Vol 14, No 6, 1971, pp 38-42

components do not have a completely resolved fine structure due to the small constant of spin-spin interaction between protons $J_{CH2-CH} = 2Hz$. Similarly, the NMR spectra of the following compounds were recorded and analyzed: potassium O-O-di(beta-methyl)-allyldithiophosphate, potassium O-O-diethyl-dithiophosphate, and sodium mono- and dithiophosphinates. Based on the foregoing data, it can be concluded that in dithiophosphinates the spin-spin coupling J_{HP} is extended even to protons separated from phosphorus by several bonds; this long-range spin-spin coupling is not observed in dithiophosphates.

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USSR UDC 547.26'118

GORAK, R. D., and ZEMLYANSKIY, N. I., L'vov State University imeni Ivan Franko

"Iodination and Chlorination of O,O-Dialkyl(phenyl) Diselenophosphates"

Leningrad, Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 1994-1995

Abstract: A study is described of the reaction of O,O-dialkyl(phenyl) diselenophosphates with chlorine and iodine. At stoichiometric ratios, the principal reaction products are bis[O,O-dialkyl(phenyl) diselenophosphates]; with excess chlorine, the reaction products are O,O-dialkyl phosphochloridoselenates. Unlike for O,O-dialkyl dithiophosphates, the presence of water in the reaction mixture reduces the yield of bis(O,O-dialkyl(phenyl) diselenophosphates. The over-all procedure of synthesizing O,O-dialkylphosphorochloridoselenates is described, citing the yield as 72-82%. A table in the original article characterizes the new compounds.

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UDC 547.26'118

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MEL'NIK, Ya. I., and ZEMLYANSKIY, N. I.

"Unsaturated Dithiophosphonic Acid Esters. Part VI. Acyl Derivatives of Unsaturated Dithiophosphate Esters"

Leningrad, Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 2111-2112

Abstract: Research on the synthesis and properties of unsaturated dithiophosphoric acid esters led to the preparation of acyl derivatives of O,O-dialkyl(alkynyl) dithiophosphoric acids by reaction of O,O-di-β-methylallyl-, O,O-di-γ-methylallyl O,O-diallyl and O,O-dipropargyl dithiophosphates of potassium with acetic, monochloroacetic, trichloroacetic, butyric and isobutyric acid halides. The structures of the products are supported by IR spectra. The saponification and acylation of the synthesized compounds were studied. Saponification with an aqueous solution of potassium hydroxide yields potassium salts of the corresponding dithiophosphoric acids indicating a break of the C-S bond. In the reaction of the obtained acyl derivatives with o-nitrophenol in the presence of potash in a solution of anhydrous benzene they act as acylating agents to form potassium o-nitrophenylacetate and O,O-alkyl(alkynyl) dithiophosphates.

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UDC 547.26'118

MEL'NIK, YA. I., and ZEMLYANSKIY, N. I.

"Unsaturated Esters of Trithiophosphoric Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 5, May 70, pp 1015-1019

Abstract: Continuing their studies on the interaction of unsaturated alcohols with phosphorus pentasulfide, the authors studied the reaction of phosphorus pentasulfide with allyl alcohol in the presence of triethylamine at a molar ratio of reacting components of 1 : 3 : 3 in a medium of absolute ether. It was found that the reaction yields a mixture of triethylamine salts of O-allyltrithio- and O,O-diallyldithiophosphoric acids. The mixture of triethylamine salts obtained in the form of oil was converted into potassium salts by treatment with potassium methylate and separated. Alkylation of potassium O-allyl trithiophosphate with alkyl halides gives neutral esters. It is shown that O-allyl-S,S-dialkyl trithiophosphates are capable of free-radical addition reactions of O,O-dialkyldithiophosphoric acids. IR spectra of the resultant compounds were studied.

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UDC 547.26'118

ZEMLYANSKIY, N. I., and MEL'NIK, Ya. I., L'vov State University imeni Ivan Franko

"Unsaturated Esters of Dithiophosphoric Acid. V. Mixed Esters of O,O-Dialkynyl (alkenyl) dithiophosphoric Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 1, Jan 70, pp 40-43

Abstract: Four series of O,O-dialkynyl(alkenyl) dithiophosphates were prepared in 64-94% yields by the reaction of potassium O,O-dipropargyl-, O,O-diallyl-, O,O-di(beta-methylallyl)-, and O,O-di(gamma-methylallyl) dithiophosphates with alkyl, alkenyl, and alkynyl halides. Potassium O,O-dipropargyl dithiophosphate with propargyl bromide in acetone solution gave an 85% yield of O,O-dipropargyl S-propargyl dithiophosphate. The following mixed esters were similarly prepared: O,O-dipropargyl S-alkenyl(alkyl or aryl)-, O,O-diallyl S-alkenyl(alkyl or aryl)-, O,O-di(beta-methylallyl) S-alkenyl(alkynyl, alkyl, or aryl)-, and O,O-di(gamma-methylallyl) S-alkenyl(alkynyl, alkyl, or aryl) dithiophosphates. The presence of hydroquinone was required to inhibit polymerization of the esters. All the above esters are liquids. Bromination of O,O-diallyl S-ethyl dithiophosphate in carbon tetrachloride with diffuse

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light at room temperature gave an 58% yield of O,O-di(beta, gamma-dibromopropyl) S-ethyl dithiophosphate, an oil. Similarly the tetrabromo derivative of O,O--di(beta-methylallyl) S-methyl dithiophosphate and the dibromo derivative of allyl O,O-diethyl thiophosphate were prepared in 75 and 65% yields, respectively.

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UDC 547.26'118

ZEMLYANSKIY, N. I., MEL'NIK, YA. I., Lvov State University imeni Ivan Franko, Lvov, Ministry of Higher and Secondary Specialized Education Ukrainian SSR

"Unsaturated Esters of Dithiophosphoric Acids. VII. Free Radical Addition of the Dialkyldithiophosphoric Acids to Their Unsaturated Esters"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 8, Aug 70, pp 1713-1716

Abstract: A reaction of the addition of dialkyldithiophosphoric acid to O,O-dialkyl-S-allyl esters of the dithiophosphoric acids in the presence of benzoyl peroxide is reported. The reactions lasted for 26 hrs at 85° yielding oily products soluble in organic solvents and insoluble in water. The results obtained show that the reaction goes against the Markovnikov's rule, by the free radical mechanism. Properties of some symmetric and unsymmetric O,O,O',O'-tetraalkyl-S,S'-propylenebisdithiophosphates are tabulated as well as three representative IR spectra.

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USSR UDC 547.26'118

GRITSAY, N. I., VIL'DANOVA, G. G., BOKALO, G. A., ZEMLYANSKIY, N. I., Lvov State University imeni Ivan Franko, Lvov, Ministry of Higher and Secondary Specialized Education Ukrainian SSR

"Arylation Reaction of O,O-Diphenyl-S-alkenedithiophosphonic Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70, pp 1973-1976

Abstract: O,O-Diphenyl-S-alkenedithiophosphates (I) were obtained by reacting O,O-diphenyldithiophosphate with alkenyl bromide in acetone. To carry out the arylation reaction, a solution of diazonium salt prepared from 0.016 g-mole of an amine, 4.8 ml concentrated HCl and 0.016 g-mole of sodium nitrite was added dropwise to a cooled mixture of (I) and 0.57 g $CuCl_2 \cdot 2H_2O$ in 50 ml acetone. Nitrogen evolution was observed at 3-4° in the case of the addition of p-nitrophenyl, at 16-18° with p-tolyl, and at 23° with phenyl diazonium chloride. After 2-3 hrs, when nitrogen evolution stopped, the oil was extracted with ether, the solvent evaporated, and the residue vacuum distilled. The product was chromatographed over alumina.

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UDC 547.26'118

ZEMLYANSKIY, N. I., VIL'DANOVA, G. G., GRITSAY, N. I., TURKEVICH, V. V., Lvov State University imeni Ivan Franko, Lvov, Ministry of Higher and Secondary Specialized Education Ukrainian SSR

"Reactions of O,O-Diphenyldithiophosphoric Acid Salts With Diazonium Salts"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70, pp 1976-1978

Abstract: It is reported that the potassium salt of O,O-diphenyldithiophosphoric acid reacts with aryl diazonium salts in aqueous medium to yield orange and red colored solid products. They decompose slowly on standing and faster in acetone solution when heated. Heated in dry state they explode. For example, to obtain O,O-diphenyl-S-p-nitrophenyldiazonium dithiophosphate, potassium O,O-diphenyldithiophosphate dissolved in water was added to a diazonium salt solution prepared from nitroaniline, concentrated HCl, and sodium nitrite in an acetate buffer solution. The reaction mixture was kept at pH 7-8. The precipitated product was washed

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and dried; its m.p. is 50° (decomposes). Diazonium solution based on p-aminobenzoic acid reacted with potassium O,O-diphenyldithiophosphate gave O,O-diphenyl-S-p-carboxyphenyldiazonium dithiophosphate, temp. of decomposition 81°. Analogously, O,O-diphenyl-S-o-carboxyphenyldiazonium dithiophosphate and its meta analogue were obtained.

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1/2 041 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--UNSATURATED ESTERS OF DITHIOPHOSPHORIC ACID. III. SYNTHESIS OF UNSATURATED DITHIOPHOSPHORIC ACID SALTS -U-

AUTHOR-(02)-MELNIK, YA.I., ZEMLYANSKIY, N.I.

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADDING CH SUB2:CHCH SUB1 OH TO P SUB2 S SUB5 IN ET SUB2 O, HEATING, AND ADDING K SUB2 CO SUB3 PPTD. (CH SUB2:CHCH SUB2 O) SUB2 PS SUB2 K, M. 126DEGREES; SIMILARLY WERE PREPD.: DIMETHALLYL ESTER ANALOG, M. 115DEGREES; DI-MECH:CHCH SUB2 ESTER ANALOG, M. 135DEGREES; AND DICINNAMYL ESTER ANALOG, M. 140DEGREES. TREATING THE K SALTS WITH PB(NO SUB3) SUB2 SOLN. GAVE ((RO) SUB2 PS SUB2) SUB2 PB (R SHOWN), WHICH WERE SOL. IN MOST ORG. SOLVENTS AND WERE PPTD. WITH H SUB2 O:CH SUB2:CHCH SUB2 (I) M. 37DEGREES; CH SUB2:CMECH SUB2 (II), M. 27DEGREES; MECH:CHCH SUB2 M. 63DEGREES; HC TRIPLE BOND CCH SUB2 M. 30DEGREES. THE K SALTS TREATED WITH AGNO SUB3 SOLN. SIMILARLY GAVE (RO) SUB2 PS SUB2 AG (R GIVEN): CH SUB2:CHCH SUB2, DECOMPD. 136DEGREES; CH SUB2:CMECH SUB2, DECOMPD. 148DEGREES; MECH:CHCH SUB2, DECOMPD. 94DEGREES; HC TRIPLE BOND CCH SUB2 DECOMPD. AT UNSTATED TEMP. WITH EXPLOSIVE VIOLENCE ON BEING HEATED; ALTHOUGH THIS SALT WAS INSOL. IN ORG. SOLVENTS AND IN H SUB2 O, THE OTHER AG SALTS COULD BE CRYSTD. FROM VARIOUS ORG. SOLVENTS. THE K SALT AND NICL SUB2 GAVE VIOLET ((CH SUB2:CHCH SUB2 O) SUB2 PS SUB2) SUB2 NI, M. 120DEGREES. IR SPECTRA SHOW THAT I AND II WERE POLYMD. TO GELS BY BEING HEATED WITH BZ SUB2 O SUB2.

FACILITY: L'VOV. GOS. UNIV. IM. FRANKO, LVOV, USSR.

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USSR

UDC: 547.26'118

MEL'NIK, YA.I., and ZEMLYANSKIY, N.I., L'vov State University imeni Ivan Franko, Lvov, Ministry of Higher and Secondary Specialized Education Ukrainian SSR

"Unsaturated Esters of Dithiophosphoric Acid. III. Synthesis of Salts of Unsaturated Dithiophosphoric Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 4, Apr 70, pp 791-794

Abstract: The authors undertook to synthesize esters of O,O-dialkyldithiophosphoric acids containing a double and triple bond in the alkyl radical, as well as to study some of their properties. For this purpose the reaction of phosphorus pentasulfide with allyl, β-methallyl, crotyl, cinnamyl and propargyl alcohols was staged in a medium of inert solvents. It was found that unsaturated primary alcohols react according to the Pishchimuki scheme to give acid esters of dithiophosphoric acid on heating to 35-40°. The acids were isolated in the form of potassium salts. Aqueous solutions of the potassium salts interact with aqueous solutions of Pb^{2+}, Ag^{+}, Ni^{2+} salts and form water-in-

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MEL'NIK, YA. I., and ZEMLYANSKIY, N. I., Zhurnal Obshchey Khimii, Vol 40, No 4, Apr 70, pp 791-794

soluble salts of the corresponding metals. IR spectra of the salts were obtained by the Spectral Laboratory of the Chair of Rare Elements, Kiev State University, Professor A. T. PILIPENKO.

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UDC 547.26'118

ZEMLYANSKIY, N. I., and BACHINSKIY, T. P., L'vov State University imeni Ivan Franko, Lvov, Ministry of Higher and Secondary Specialized Education Ukrainian SSR

"Reactions of O,O-Dialkyl(aryl)dithiophosphoric Acids With Aldehydes and Ketones. IV. Interaction of O,O-Dialkyldithiophosphoric Acids With Ketones"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 5, May 70, pp 1019-1021

Abstract: For purposes of studying the reactivity of the carbonyl group of ketones, the authors investigated the interaction of some O,O-dialkyldithiophosphoric acids with ketones. It was found that aromatic and aliphatic-aromatic ketones react with O,O-dialkyldithiophosphoric acids analogously to aldehydes on the carbonyl group, but under more severe conditions. The corresponding O,O,O,O-tetraalkyl-S,S-alkylphenyl(diphenyl)methane-bis-dithiophosphates were isolated.

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99934d Unsaturated esters of dithiophosphoric acid. V. Mixed esters of O,O-dialkyne (alkene) dithiophosphoric acids. Zemlyanskii, N. I.; Mel'nik, Yu. I. (L'vov. Gos. Univ. im. Franko, Lvov, USSR). *Zh. Obshch. Khim.* 1970, 40(1), 40-3 (Russ). Addn. over 1 hr of 1.94 g HC:CCH$_2$Br to 4 g (HC:CCH$_2$O)$_2$PS$_2$K in Me$_2$CO gave, after several hr at room temp. and 4-6 hr at 35°, 85% (HC:CCH$_2$O)$_2$PS(SCH$_2$C:CH), $b_{0.001}$ 80°, d^{20} 1.2212, n_D^{20} 1.5600. Similarly were prepd. the following, all of which required the presence of hydroquinone inhibitor during handling in order that polymn. be prevented: (HC:CCH$_2$O)$_2$PS$_2$R (R shown): CH$_2$:CHCH$_2$, 87%, $b_{0.001}$ 76°, 1.1842, 1.5510; CH$_2$:CMeCH$_2$, 73%, $b_{0.001}$ 79°, 1.1609, 1.5460; PhCH$_2$, 70%, $b_{0.001}$ 110°, 1.2139, 1.5870; Me, 76%, $b_{0.001}$ 58°, 1.2209, 1.5490; Et, 83%, $b_{0.001}$ 61°, 1.1850, 1.5414; Pr, 88%, $b_{0.001}$ 65°, 1.1574, 1.5360; Bu, 75%, $b_{0.001}$ 71°, 1.1382, 1.5312; Am, 82%, $b_{0.001}$ 80°, 1.1167, 1.5262. (HC:CCH$_2$O)$_2$PS$_2$K, used in the reaction, m. 138°. Similarly appropriate K salts and RBr gave (MeCH:CHCH$_2$O)$_2$PS$_2$R (R shown): HC:CCH$_2$ 64%, $b_{0.001}$ 84°, 1.1077, 1.5384; CH$_2$:CHMe, 85%, $b_{0.001}$ 78°, 1.0800, 1.5308; CH$_2$:CMeCH$_2$ 76%, $b_{1.001}$ 82°, 1.0096,

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1.5282; $PhCH_2$, 67%, $b_{0.001}$ 108°, 1.1166, 1.5562; Me, 83%, $b_{0.001}$ 55°, 1.1048, 1.5280; Et, 89%, $b_{0.001}$ 68°, 1.0819, 1.5240; Pr, 78%, $b_{0.001}$ 76°, 1.0645, 1.5198. $(MeCH:CHCH_2O)_2PS_2K$, m. 135°, was used. $(RO)_2P(S)SR^1$ were prepd. similarly (R and R^1 shown resp.): $CH_2:CMeCH_2$, $CH_2:CMeCH_2$ 84%, $b_{0.001}$ 73°, 1.0651, 1.5230; $CH_2:CMeCH_2$, $CH_2:CHCH_2$, 93%, $b_{0.001}$ 62°, 1.0787, 1.5257; $CH_2:CMeCH_2$, $HC:CCH_2$ 92%, $b_{0.001}$ 72°, 1.1067, 1.5321; $CH_2:CMeCH_2$, $PhCH_2$, 86%, $b_{0.001}$ 105°, 1.1187, 1.5575; $CH_2:CMeCH_2$, Me (I) 91%, $b_{0.001}$ 42°, 1.1008, 1.5224; $CH_2:CMeCH_2$, Et, 94%, $b_{0.001}$ 48°, 1.0793, 1.5175; $CH_2:CHCH_2$, $CH_2:CMeCH_2$, 80%, $b_{0.001}$ 54°, 1.0975, 1.5302; $CH_2:CHCH_2$, $PhCH_2$, 79%, $b_{0.001}$ 95°, 1.1516, 1.5706; $CH_2:CHCH_2$, amyl, 87%, $b_{0.001}$ 69°, 1.0595, 1.5118; $CH_2:CHCH_2$, C_6H_{13}, 84%, $b_{0.001}$ 80°, 1.0465, 1.5100. $(CH_2:CMeCH_2O)_2PS_2K$ m. 115°. Bromination of $(CH_2:CHCH_2O)_2PS_2Et$ in diffuse light in CCl_4 gave the tetrabromide, 58%, d^{20} 1.9285, n_D^{25} 1.5940; similarly was prepd. the tetrabromide of I, 1.8796, 1.5882, and the dibromide of $(EtO)_2PS_2CH_2CH:CH_2$, 1.6031, 1.5613.

G. M. Kosolapoff

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UDC: 547.26'118

USSR

ZEMLYANSKIY, N. I., MEL'NIK, Ya. I., TURKEVICH, V. V., L'vov State University imeni Ivan Franko

"Unsaturated Esters of Dithiophosphoric Acid. VIII. Addition of Dialkyl-dithiophosphoric Acids to Their S-Propargyl Esters"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 6, Jun 72, pp 1269-1273

Abstract: The authors studied addition reactions of dialkyl-dithiophosphoric acids with their S-propargyl esters. The reactions were carried out in the presence of benzoyl peroxide or sodium alkoxide. It was found that in both cases the addition reaction takes place with the formation of a single product -- 1,2-bis(O,O'-dialkyldithiophosphato)-2-propene -- in accordance with Markovnikov's rule. The adduct ratio was 1:1 in all instances.

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UDC: 547.26'118

ZEMLYANSKIY, N. I., BELOUS, G. F., MURAV'YEV, I. N., L'vov State University imeni Ivan Franko

"Investigation of the Properties of Tetrathiophosphate Esters"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 6, Jun 72, pp 1273-1277

Abstract: A number of asymmetric neutral esters of tetrathiophosphoric acids, brominated trialkyl tetrathiophosphates, and bis(dialkyltetrathiophosphoryl)-alkenes were synthesized by alkylating triethylammonium and potassium salts of dialkyltetrathiophosphoric acids with alkyl halides, alkenes, alkynes, and also alkylene dihalides. It was found that dialkyl allyl tetrathiophosphates add O,O-diethyldithiophosphoric acid in the presence of benzoyl peroxide contrary to Markovnikov's rule. S,S-Alkylene(dialkyldithiophosphoryl)dialkyl tetrathiophosphates and dialkyl S-γ-thiocyanopropyl tetrathiophosphates were synthesized by dialkyl S-$\beta(\gamma)$-bromoalkyl tetrathiophosphate alkylation of O, O-dialkyl dithiophosphates and potassium thiocyanate, respectively.

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TITLE--CHEMICAL STATE OF THE TIN ATOM IN ORGANOTIN CELLULOSE DERIVATIVES STUDIED BY GAMMA-RESONANCE SPECTROSCOPY -U-

AUTHOR-(05)-KHRAPOV, V.V., ROCHEV, V.YA., ARTEMOVA, YU.V., VIRNIK, A.D., ZEMLYANSKIY, N.N.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(2), 145-9

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANOTIN COMPOUND, CELLULOSE, ACRYLIC ACID, COPOLYMER, POLYMER STRUCTURE, GAMMA SPECTROSCOPY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0315 STEP NO--UR/0460/70/012/002/0145/0149

CIRC ACCESSION NO--AP0111509

UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--020CT70

CIRC ACCESSION NO--AP0111509

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REACTION OF A CELLULOSE (I),POLY. (ACRYLIC ACID) GRAFT COPOLYMER (II) AND OF CN CELLULOSE (III) WITH (BU SUB3 SN)SUB2 O OR BU SUB2 SNCL AND THE STRUCTURE OF THE POLYMERS THEREOF WERE STUDIED BY GAMMA,RESONANCE SPECTROSCOPY. THE GAMMA,RESONANCE SPECTROSCOPIC PARAMETERS OF THE ORGANOTIN-DERIVS. OF II AND III SUGGESTED THAT NEW SN CONTG. I DERIVS. HAVING BU SUB3 SN0 SUB2 C GROUPS WERE FORMED. THE DATA AGREED WITH CHEM. ANAL.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--ANTIMICROBIAL TIN CONTAINING CELLULOSIC MATERIALS -U-

AUTHOR-(05)-ARTEMOVA, YU.V., VIRNIK, A.D., PLOTKINA, M.S., ZEMLYANSKIY, N.N., MAKAROVA, R.A.
COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., TEKHNOL. TEKST. PROM. 1970, (1), 93-6

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, MATERIALS

TOPIC TAGS--WOOD CHEMICAL PRODUCT, FABRIC, ORGANOTIN COMPOUND, BACTERICIDE, STAPHYLOCOCCUS AUREUS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0746 STEP NO--UR/0324/70/000/001/0093/0096

CIRC ACCESSION NO--AT0132848

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AT0132848

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CELLULOSIC FABRICS WITH 9PERCENT GRAFTED ACRYLIC ACID WERE SOAKED 10 HR AT 20DEGREES IN AQ. SOLNS. CONTG. 0.05-5PERCENT (BY WT. OF FABRIC) ME SUB3 SNOH, ET SUB3 SNOSNET SUB3, OR BU SUB3 SNOSNBU SUB3. ALTERNATELY, THE FABRIC WAS BOILED IN AN ACETONE SOLN. OF PH SUB3 SNOH. THE TREATED FABRICS INHIBITED THE GROWTH OF STAPHYLOCOCCUS AUREUS AND OTHER BACTERIA ON AGAR, AND THE EFFECT PERSISTED AFTER SEVERAL LAUNDERING CYCLES. BEST RESULTS WERE OBTAINED WITH ET SUB3 SNOSNET SUB3 AND BU SUB3 SNOSNBU SUB3. FACILITY: MOSK. TEKST. INST., MOSCOW, USSR.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--SYNTHESIS OF TIN AND GERMANIUM TETRAACYLATES -U-

AUTHOR-(03)-MELNICHENKO, L.S., ZEMLYANSKIY, N.N., SAMURSKAYA, K.A.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(2), 351-3

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANOTIN COMPOUND, TIN COMPOUND, ACYL RADICAL, ORGANOGERMANIUM COMPOUND, GERMANIUM COMPOUND, ORGANOMERCURY COMPOUND, CHEMICAL SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1556 STEP NO--UR/0020/70/190/002/0351/0353

CIRC ACCESSION NO--AT0116964

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AT0116964

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADDING 58.56 G SNBR SUB4 TO 95 G BU SUB2 SN (OAC)SUB2 IN ET SUB2 O GAVE 91.2PERCENT SN(OAC)SUB4, M. 238-9DEGREES. THE YIELD WAS 80PERCENT IN REFLUXING HEXANE; IT WAS 90PERCENT FROM SNI SUB4 AND BU SUB2 SN(OAC)SUB2 IN HOT HEXANE. SIMILARLY WAS PREPD. 72.9PERCENT SN(O SUB2 CET)SUB4, M. 134-5DEGREES. BU SUB2 SN(OAC)SUB4 AND GEBR SUB4 GAVE 96.9PERCENT GE(OAC)SUB4, M. 155-6DEGREES. GE(O SUB2 CET)SUB4M N, 90-1DEGREES, WAS SIMILARLY PREPD. REFLUXING SN (OAC)SUB2 AND HG(OAC)SUB2 IN AC SUB2O GAVE HG, AND 90.9PERCENT SN(OAC)SUB4. EQUIMOLAR AMTS. OF BU SUB2 SN(OAC)SUB2 AND SNCL SUB4 IN C SUB6 H SUB6 GAVE 82PERCENT (ACO)SUB2 SNCL SUB2, DECOMPD. 187-90DEGREES. THIS ALSO FORMED IN AC SUB2 O FROM HG(OAC)SUB2 AND SNCL SUB2.

FACILITY: FIZ. KHIM. INST. IM. KARPOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

ZEMLYANSKIY, V.M.

UDC 681.142.001.2

"Optimization Of Integrated Logical Circuits By The Method Of Statistical Simulation Of A System Of Output Control With The Aid Of An Electrical Computer"

V sb. Mikroelektronika (Microelectronics--Collection Of Works), Moscow, Izd-vo "Sovetskoye Radio," No 4, 1971, pp 361-367

Abstract: Methods are considered for optimization of integrated circuits with respect to the criterion of the percent of output. In contrast to known methods of determining the percent of output of suitable microcircuits which are based on the concept of an area of working capacity in the coordinates of the quality indices of microcircuits, it is proposed in the present work, in order to determine the percent of output, to use the area of working capacity in the coordinates of the parameters of the output control of microcircuits which are planned. The basis of the proposed method is given as well as an algorithm and an optimization program for solution on the Minsk-22 computer of the problem of optimization formulated, and examples are presented. A block diagram is presented of the succession of tests used during optimization, and a table showing the course of the optimization scheme. 2 fig. 1 tab. 5 ref.

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USSR

ZEMLYANSKOV, S. I.

UDC: 621.372.061

"Device With Controllable Discrete Signal Delay"

V sb. Radioelektron. v nar. kh-ve SSSR, Ch. 2 (Radioelectronics in the National Economy of the USSR, Part 2--collection of works) Kuybyshev, 1970, pp 306-308 (from RZh-Radiotekhnika, No. 5, March 71, Abstract No. 5A137)

Translation: The problem is considered of matching the speeds of the receiving device and the information transmitter in the emission of discrete information over a multibeam channel for systems where the received signals are processed over one of the beams. Two illustrations, bibliography of one. N. S.

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USSR

UDC 542.61:546.799.3

ZAKHARKIN, B. S., ZEMLYANUKHIN, V. I., and SHEVCHENKO, V. B.

"Amine Extraction of Neptunium (IV) from Nitrate Solutions"

Leningrad, Radiokhimiya, Vol 12, No 4, 1970, pp 577-584

Abstract: The authors investigated the extraction properties of amines of various structures with respect to the nitrate of tetravalent neptunium using the isotope Np-239. Specimens were prepared by irradiating uranium dioxide. After irradiation and aging, the uranium dioxide powder was dissolved in 1.5 M nitric acid. Neptunium was isolated from the solution by amine extraction. The nature of the gamma spectrum and rate of decay were used to check purity. Primary aliphatic, secondary aliphatic and aliphatic-aromatic, and tertiary aliphatic-aromatic and aliphatic amines were used. Basically, 0.1 M solutions of the amines in m-xylene were prepared. To form monoitrates of the amines, the organic solutions were treated with nitric acid in equimolar quantities. The neptunium was stabilized in the tetravalent state by ferrous nitrate in hydrazine or by hydrazine alone with the application of heat in a 4-6 M nitrate solution for one hour at 80°C. The distribution coefficients of neptunium were studied during re-extraction, thus eliminating possible errors due to inextractable forms. Mixing of phases was done for five minutes at 20±2°C. Diffusion coefficients were calculated from the ratio of the peaks

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USSR"

ZAKHARKIN, B. S., et al., Radiokhimiya, Vol 12, No 4, 1970, pp 577-584

corresponding to the gamma line of Np-239 at 87 Kev. The accuracy of the method for a single determination is ±0.30% with 0.95 reliability. From three to five determinations were made. The variation in the extraction properties of the amines studied is explained from the standpoint of the basicity of the amines as well as the polarity of the salts which they form.

2/2

1/2 018 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--STABILITY OF SOLUTIONS OF AMINES TO SEPARATION INTO TWO PHASES -U-

AUTHOR-(02)-ZEMLYANUKHIN, V.I., ZAKHARKIN, B.S.

COUNTRY OF INFO--USSR

SOURCE--RADIOKHIMIYA 1970, 12(1), 76-85

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--URANIUM, NEPTUNIUM, PLUTONIUM, AMINE, CHEMICAL SEPARATION, ORGANIC SOLVENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1465 STEP NO--UR/0186/70/012/001/0076/0085

CIRC ACCESSION NO--AP0135136

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0135136

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FORMATION OF A 2ND PHASE IN TRIOCTYLAMINE (I) DILUENT SYSTEM USED IN THE EXTN. OF URANYL, NP PRIME4POSITIVE, AND PU PRIME4POSITIVE FROM AQ. NITRATE SOLNS. IS CAUSED BY A DECREASE IN THE SOLY. OF SOME DILUENTS AS A RESULT OF THE FORMATION OF AMINE NITRATE, WHICH HAS A STRONG TENDENCY TOWARDS POLYMN. ADDN. OF OCTANOL (E.G., TO THE I KEROSINE SYSTEM) INCREASES THE SOLY. AND PREVENTS FORMATION OF A 2ND PHASE; FOR INSTANCE, IN THE CASE OF 10-20PERCENT I SOLNS. IN KEROSINE, THE AMT. OF OCTANOL TO BE ADDED TO PREVENT FORMATION OF A 2ND PHASE IS 0.05 MOLE FOR EACH 0.1 MOLE OF HNO SUB3 IN THE ORG. PHASE. THE LIMITS OF FORMATION OF A 2ND PHASE IN THE ABOVE SYSTEMS ARE SHOWN GRAPHICALLY; IN THE ABSENCE OF U, NP, OR PU, NO 2ND PHASE IS FORMED IN I SOLNS. IN CCL SUB4, XYLENE, AND POLYALKYLBENZENE EVEN IF THEY CONTAIN HNO SUB3, BUT THE INTRODUCTION OF U, NP, OR PU CAUSES SEPN. OF A 2ND PHASE.

UNCLASSIFIED

USSR

UDC 595.422-19(47)

ZEMSKAYA, A. A., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy of Medical Sciences USSR

"Mites of the Family Dermanyssidae Konelati, 1859 in the USSR"

Moscow, Meditsinakaya Parazitologiya i Parazitarnyye Bolezni, No 6, 1971, pp 709-717

Abstract: Of the 16 known mite species of the family Dermanyssidae associated with birds, 5 are widespread in the USSR - D. gallinae, D. hirundinis, D. passerinus, D. grochovksae, and D, quintus - and 3 are much less common - D. brevis, D. scutatus, and D. oti. D. gallinae and D. hirundinis occur in almost all parts of the European and Asian USSR, often at the same time. D. gallinae is found mostly on poultry, while D. hirundinis parasitizes the sparrow. Maps and accompanying tables show the regions in which the 5 common mites have been found. D. gallinae is a synanthropic species, especially in the North. In Central Asia it is abundant both on poultry farms and in birds' nests remote from human habitation. Most of the Dermanyssidae are typical nest parasites. D. gallinae is the most important species, epidemiologically and epizootically because it frequently attacks man and penetrates his dwelling. D. gallinae the agents of spirochetosis, Newcastel disease, pseudotuberculosis, tickborne encephalitis, and Q fever among birds.

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USSR

UDC 911.3:616.988.25(470.342)

PCHELKINA, A. A., KORENBERG, E. I., ZEMSKAYA, A. A., SUVOROVA, A. G., and KOVALEVSKIY, Yu. V.

"A Study of the Virus-Carrying Properties of Ixodes persulcatus P. Sch. in Tickborne Encephalitis Foci of Forests in the Southern European Taiga"

V sb. Vtoroye Acarologicheskoye soveshchaniye. Ch. 2. Tezisy dokl. (Second Acarological Conference. Part 2. Theses of Reports -- collection of works) Kiev, "Nauk. dumka," 1970, pp 96-97 (from RZh-Meditsinskaya Geografiya, No 4, Apr 71, Abstract No 4.36.59)

[No abstract]

1/1

USSR

UDC 620.17:669.14.018.44

MASLENKOV, S. B., BUROVA, N. N. and ZEMSKAYA, T. V., Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin (TsNIIChERMET)

"Anisotropy of the Mechanical Properties of Nickel-Base High-Temperature Alloys"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 1, 1972, pp 70-71

Abstract: This study concerns the effect of temperature on the anisotropy of the mechanical properties of high-temperature alloys (with various degrees of alloying) including KhN70MVTYuB (EI598), EI826, EI929, EP109 as well as on various smelting methods such as open induction vacuum-arc and double vacuum-arc remelting. Two factors are shown to affect the anisotropy of the mechanical properties: the chemical inhomogeneity and its related differences in the degree of strengthening of certain areas along and between the axes; nonuniform distribution of insoluble inclusions -- the liquation products. The most resistant in the nickel-base alloys are tungsten liquation inclusions causing nonuniform decay in the fibrous

USSR

MASLENKOV, S. B., et al, Metallovedeniye i termicheskaya obrabotka metallov, No 1, 1972, pp 70-71

structure following hot remelting of castings. At room temperature the anisotropy of the mechanical properties is related basically to the non-uniform distribution of the strengthening phase. At solubility temperatures the anisotropy in plasticity is determined primarily by the amount and distribution of nonmetallic inclusions. To reduce the anisotropy of the mechanical properties of the nickel-base alloys, it would be necessary to refine them with respect to nonmetallic inclusions by double vacuum remelting. (2 illustrations, 1 table, 2 bibliographic references).

2/2

ZEMSKAYA, T. V.

JPRS 55085

4 May 1972

ANISOTROPY OF THE MECHANICAL PROPERTIES OF HEAT-RESISTANT ALLOYS ON A NICKEL BASE

UDC 620.17:669.14.018.44

[Article by S.B. Maslenkov, N.N. Burova, T.V. Zemskaya, Central Scientific Research Institute of Ferrous Metallurgy, Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, Russian, No 1, 1972, pp 70-71]

A sharply expressed dendritic heterogeneity is developed during crystallization in heat-resistant alloys on a nickel base [1]. In the refining process the elements of the dendritic structure and the nonmetallic inclusions are drawn in the direction of the deformation, forming a filamentary structure that is characterized by a chemical and structural heterogeneity. The difference in the chemical composition of the segments corresponding to the axes and interaxes and the different degree of strengthening during dispersion hardening in conjunction with the line arrangement of the insoluble inclusions concentrated in the interaxes produce an anisotropy in the mechanical properties of the deformed metal.

In determining the means for decreasing the anisotropy on the deformation capacity of the metal the influence of the microheterogeneity and of the heterogeneous distribution of the insoluble inclusions. The first type of heterogeneity can be explained by the different degree of alloying of the axial and interaxial volumes as well as by their structural state. The heat resistance of such a heterogeneity is relatively low and may be lowered by high-temperature heating and mechanical refining of the alloy. Decreasing the second type of heterogeneity requires using optimal smelting procedures which will ensure the required degree of refining.

Depending on the composition of the alloy and the test temperature the relative influence of the structural and chemical

USSR

UDC 669.24.017

MASLENKOV, S. B., BUROVA, N. N., and ZEMSKAYA, T. V.

"Intracrystalline Liquation in Ingots of Heat-Resistant Nickel-Base Alloys Produced by Vacuum Arc Remelting"

Spetsial'nyye Stali i Splavy [Special Steels and Alloys--Collection of Works], No 77, Metallurgiya Press, 1970, pp 49-55

Translation: The method of local X-ray spectral analysis is used to study the liquation microirregularity in ingots of heat-resistant alloys types EP109, Ei929, EI826, and EI598, produced by vacuum arc remelting. The direction of liquation and intensity of segregation of the basic components of the alloys are determined. Niobium and titanium, the elements having a high degree of chemical affinity to nickel, are most strongly liquated. The alloying elements can be placed in the following series in order of increasing tendency to liquation in nickel-based alloys: aluminum, cobalt, chromium, tungsten, molybdenum, titanium, niobium.

The intensity of segregation of alloying elements increases in the direction toward the axis of the ingot, sharply increasing upon transition from the zone of columnar crystallization to the equilibrium crystallization zone. 2 tables.

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USSR UDC 547.26'118

PUDOVIK, A. N., CHERKASOV, R. A., BYKOVA, I. V., YEVSTAF'YEV, G. I., ZEMSKAYA, Z. I., NAZYPOV, M. N.

"Interaction of Tetraalkyl(aryl)stannates with Phosphorus Dithio Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 76-80

Abstract: The interaction of tetraethyl lead with dithio acids of phosphorus taking place with breaking of one, two or three Pb-C bonds and the formation of the corresponding organolead dithiophosphates has been described [A. N. Pudovik, ZhOKh, No 41, 1472, 1971]. As a continuation of this research, a study was made of the reaction of phosphorus dithio acids with the tetraalkyl derivatives of tin. The dealkylation of the tetraalkyl(aryl)stannates of phosphorus dithio acids takes place with breaking of the Sn-C bond and lead to the formation of trialkyl(aryl)stannyl derivatives of dithiophosphates and phosphonates, The methods of gas adsorption chromatography and differential-thermal analysis were used to study the relative reactivity of tetraalkyl (aryl)stannates. The ease of stripping off the radicals connected to the tin atom decreases in the following series C_6H_5, C_2H_5, C_3H_7, C_4H_9. Preliminary data are presented on the fungicidal and fungistatic activity of organotin diothiophosphates and phosphonates, their anthelmintic and insecticidal activities. High activities in all these areas were generally demonstrated.

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USSR

UDC 669.14:539.2:546.26

ZEMSKIY, S. V., LITVINENKO, D. A., GRIGORKIN, V. I., and KHARCHIKOVA, T. V., Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin and Lipetsk Affiliate of the Moscow Institute of Steel and Alloys

"Diffusion of Carbon in Alpha-Iron and Steels 17GS and 18KhNVA Containing Carbides"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy--Chernaya Metallurgiya, No 6, Jun 73, pp 93-96

Abstract: A method was developed for calculating the diffusion coefficients of carbon in alpha-iron and steels containing a carbide phase in the case of an "instantaneous" source of the substance being diffused onto the sample surface. The coefficients of diffusion of carbon in armco-iron and 17GS and 18KhNVA steels were determined and the temperature relationship of the diffusion coefficients was found. From the expressions derived for diffusion coefficients it was evident that the combined alloying of ferrite with Mn and Si (17 GS steel) and with Cr, W, and Ni (18KhNVA) leads to a lowering of the diffusion coefficient magnitude and to an increased activation energy of this process. Thus, at 500°C the diffusion coefficients for carbon in 17GS steel are 100 times less, and in steel 18KhNVA, 1000 times less than in armco iron. 3 figures, 7 bibliographic references.

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1/3 024 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--STRUCTURE OF SURFACE LAYERS AND ITS EFFECT ON THE PROPERTIES OF TRANSFORMER STEEL -U-

AUTHOR-(05)-GRIGORKIN, V.I., MOSKALEVA, L.N., MEDVEDEVA, N.N., ZEMSKIY, S.V., CHERNENILOV, M.F.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(2), 297-301

DATE PUBLISHED----------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--X RAY DIFFRACTION ANALYSIS, ELECTRON MICROSCOPY, METAL ROLLING, TRANSFORMER STEEL, SILICON ALLOY, METAL SURFACE PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1932 STEP NO--UR/0048/70/034/002/0297/0301

CIRC ACCESSION NO--AP0115743

UNCLASSIFIED

273 024 UNCLASSIFIED

CIRC ACCESSION NO--AP0115743 PROCESSING DATE--09OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COMPN. AND STRUCTURE OF SURFACE LAYERS AND THE INCIDENCE OF SURFACE IMPURITIES IN TRANSFORMER STEEL STRIP AT VARIOUS STAGES OF MANUF. WERE STUDIED TO DET. THE LONGITUDINAL AND TRANSVERSE DISTRIBUTION OF THE SURFACE FILM ON THE STRIP AND TO FIND MEANS FOR IMPROVING INTEROPERATION DESCALING. LAB. AND INDUSTRIAL SCALE TESTS WERE MADE ON 70 FURNACE HEATS; THE STRIP SPECIMENS WERE EXAMD. CHEM., METALLOGRAPHICALLY, BY X RAY DIFFRACTION, ELECTRON MICROSCOPY, AND RADIOISOTOPES. FAYALITE WAS THE CHIEF COMPONENT OF THE SURFACE LAYER RESPONSIBLE FOR DIFFICULTIES IN CHEM. DESCALING. FOLLOWING ROLLING FROM 2.5 TO 0.6 MM, THE SURFACE LAYERS CONTAINED C3-10, SIO SUB2 1-7, FE SUB2 O SUB3 0.8-1.6, AND FE 82-90PERCENT. THE AMT. OF SCALE AFTER ROLLING DEPENDED ON THE CONSTITUTION OF THE DESCALED SURFACE, AND CONSTITUTED IS SIMILIAR TO 0.65 G-M PRIME2 AFTER THE 1ST COLD ROLLING AND IS SIMILIAR TO 2.85 G-M PRIME2 IN THE FINISHING STAGE. A METALLOGRAPHIC ANAL. OF SPECIMENS SUBJECTED TO HIGH TEMP. ANNEALING IN H, N, AND A VACUUM SHOWED THAT, REGARDLESS OF THE ANNEALING ATM., THE THICKNESS OF THE SURFACE LAYERS WAS 6-80 AND 4-36 MU AT THE EDGES AND IN THE MIDDLE OF THE STRIP, RESP. IN THE ABSENCE OF AN OXIDE SURFACE LAYER THE MAGNETIC INDUCTION WAS 19,200-19,500 G WHILE IN THE PRESENCE OF A THICK LAYER IT WAS SIMILIAR TO 18,700 G. A MATH. ANAL. OF THE DISTRIBUTION CURVES OF C CONCN. IN THE METAL AND IN THE OXIDE LAYER SHOWS THAT THE RATE OF C DIFFUSION (OWING TO A DECARBURIZING ANNEAL) IN THE LAYER AT VARIOUS TEMPS. WAS A FACTOR OF 10 PRIME3 TO 10 PRIME6 LESS THAN THOSE IN THE FESI ALLOY.

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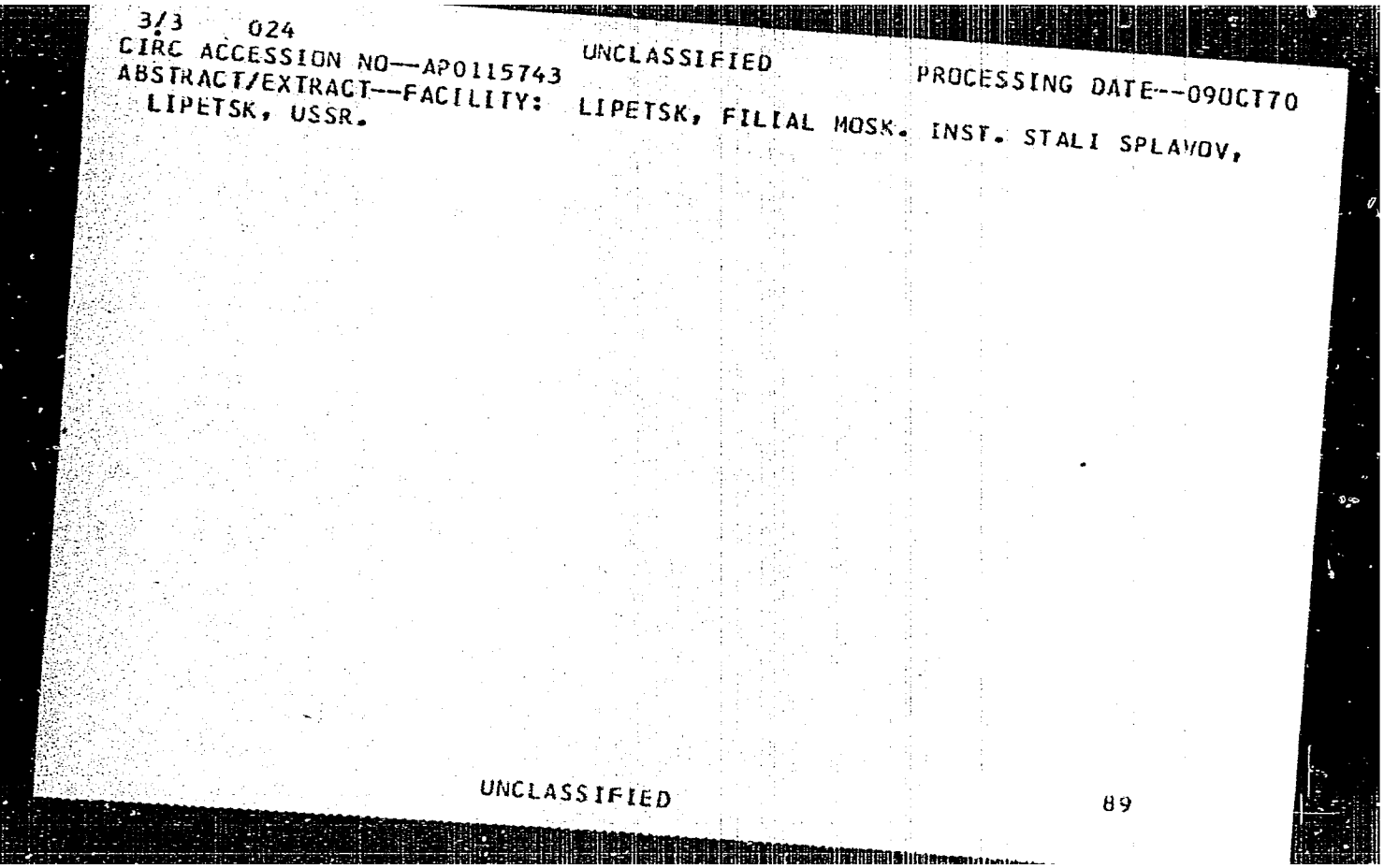

3/3 024 UNCLASSIFIED PROCESSING DATE--09OCT70
CIRC ACCESSION NO--AP0115743
ABSTRACT/EXTRACT--FACILITY: LIPETSK, FILIAL MOSK. INST. STALI SPLAVOV,
LIPETSK, USSR.

UNCLASSIFIED 89

USSR

UDC 669.15'24-194:539.2191.3

ZEMSKIY, S. V., GRIGORKIN, V. I., ZAKHARENKOVA, V. I., and KUKUSHKINA, V. N., Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin, Lipets Branch of the Moscow Institute of Steel and Alloys

"Diffusion of Carbon in Ferro-Nickel Steels of Different Composition"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 10, 1972, pp 115-118

Abstract: The diffusion of carbon was investigated on welded pairs of ferro-nickel steel with a Ni content corresponding to extreme concentrations possible in inverse martensitic transformation of low-carbon (0.06% C) steels with 10% Ni and medium-carbon (0.38% C) steels with 18% Ni. The diffusion pairs were prepared from cubic steel specimens into which the radioactive isotope C^{14} was introduced. A method was developed of determining the diffusion coefficients of inclusion admixtures in the three-component system with distinct diffusion coefficients in each half of the welded specimen. The coefficients of carbon diffusion were specified in alloys with 0.38% C and 9, 18, and 27% Ni and in alloys with 0.006% C and 5, 10, and 15% Ni. The temperature dependences of the diffusion coefficient of carbon in Fe-Ni alloys in γ-solid solution were determined. Four figures, ten formulas, five bibliographic references.

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USSR

UDC 621.771.8:539.219.

ZEMSKIY, S. V., GOLOVANENKO, S. A., and CHUB, V. M.

"Diffusion Processes in Bimetals"

Spetsial'nyye Stali i Plavy (Special Steels and Alloys - Collection of Works), No 77, Metallurgiya Press, 1970, pp 150-159

Translation: The significance of diffusion in processes of formation of the transition zone in bimetals is studied. Diffusion of carbon in bimetals consisting of carbon steel plus types Kh18T, Kh25T, and Kh18N10T steels is studied. A method is suggested for determining the diffusion parameters of carbon on the basis of curves of photometry of autoradiograms. The diffusion coefficients and activation energy of carbon in types Kh17T, Kh25T, Kh18N10T, and 3 steels, and of nickel in Kh17T and Kh25T steels are determined. The influence of intermediate nickel interlays and stresses on redistribution of carbon in these bimetals is studied. 6 figures; 1 table; 11 biblio. refs.

1/1

1/2 030 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--REDISTRIBUTION OF SULFUR IN TRANSFORMER STEEL -U-

AUTHOR--GRUZIN, P.L., ZEMSKIY, S.V., GRIGORKIN, V.I., MOSKALEVA, L.N., SALKOVA, V.K.

COUNTRY OF INFO--USSR

SOURCE--METALLOVED. TERM. OBRAB. METAL. 1970, (2) 16-19

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--TRANSFORMER STEEL, SULFUR, COLD ROLLING, THERMAL DIFFUSION, RADIOGRAPHY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1310 STEP NO--UR/0129/70/000/002/0016/0019

CIRC ACCESSION NO--AP0106097

UNCLASSIFIED

2/2 030 UNCLASSIFIED

CIRC ACCESSION NO--AP0106087 PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MICRODISTRIBUTION OF S IN TRANSFORMER STEEL WAS STUDIED BY AUTORADIOGRAPHY. TWO CONDITIONS WERE STUDIED, (1) COLD ROLLED FOLLOWED BY DECARBURIZATION HEATING, (2) COLD ROLLED FOLLOWED BY HIGH TEMP. ANNEALING IN H OR VACUUM THEN GIVEN A 2ND COLD ROLL. S IS DISTRIBUTED UNEVENLY, SULFIDES WERE OBSD. EVEN FOLLOWING HIGH TEMP. HEATING. RATIOMETRIC ANAL. OF THE LAYERS SHOWED THAT FOLLOWING HIGH TEMP. ANNEALING, THE CONCN. OF S INSIDE THE SHEET WAS LOWERED TO ONE THIRTIETH-ONE TWENTIETH AS COMPARED WITH THE INITIAL WHILE THE SURFACE OF THESE SAME LAYERS (UP TO 5 MU) INCREASED CONCN. 5-10 TIMES. THE ENRICHED S LAYER MUST BE REMOVED. THE STUDY OF C AND S DIFFUSION IN TRANSFORMED STEEL SHOWED THAT AT 900DEGREES, THE DIFFUSION OF S PROCEEDS AT ONE TENTH PRIME4, AND AT 1200DEGREES, AT ONE TENTH THE TIME OF C DIFFUSION.

UNCLASSIFIED

USSR

UDC 621.793.72:533.9

ZEMSKOV, G. V., KOVAL'CHUK, YU. M., SHARIVKER, S. YU., and TOLOK, V. K., Odessa Polytechnical Institute, Kiev Institute of Civil Aviation Engineers, Institute of Problems of Material Science, Academy of Sciences UkrSSR

"Use of Substrata to Increase the Bonding Strength of Plasma Antifriction Coatings with the Base"

Kiev, Poroshkovaya Metallurgiya, No 12, Dec 73, pp 24-27

Abstract: The authors studied the influence of substrata of molybdenum and nickel aluminide on the bond strength of plasma coatings containing a solid lubricant with the base. The initial material used to apply the sublayer was molybdenum powder or a composite Al-Ni powder produced by chemical deposition of nickel on aluminum particles. It was found that the use of a substratum of nickel aluminide during plasma atomization of antifriction coatings containing molybdenum disulfide as the solid lubricant increased the bond strength by ~30%.

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Coatings

USSR

LUK'YANOV, V. M., ZEMSKOV, G. V., KOGAN, R. L., and VIDERMAN, V. S.

"Oxidation of Diffusion Coatings on a Niobium Alloy"

Kiev, Metallofizika, No 32, 1970, pp 127-130

Translation: This study presents the results of electron, X-ray diffraction, and microstructural analysis of multicomponent coatings on the VN-2A niobium alloy after their oxidation at the temperature 700-1200°C for 0.5-100 hours. The sequence of the formation of oxides on the surface of the (Cr + Ti) - Si coating was studied. Niobium oxide NbO appears at the first stage, followed by the oxides TiO_2, SiO_2, and Cr_2O_3. Further oxidation results in an increased concentration of Cr_2O_3 in the oxide film. In case of a prolonged oxidation of a coating at 1100°C for 100 hours the oxide film contains SiO_2 with an inclusion of oxides with a structure and parameters of TiO_2.

Bibliography: 5 entries. Illustrations: 2. Tables: 1.

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USSR

UDC 539.219.3

ZEMSKOV, G. V., KOGAN, R. L., and MIKOTINA, N. F.

"Codiffusion of Elements in Chromium Aluminizing"

Kiev, Metallofizika, No 32, 1970, pp 124-127

Translation: The research results obtained in the surface alloying of commercial iron and steel 20 with aluminum and chromium from powdered mixtures of these elements in containers with a fusible seal, are set forth. It is shown that only with a definite aluminum and chromium ratio is it possible to obtain diffusion layers simultaneously containing both elements in considerable amounts. The kinetics of the process of chromium aluminizing and the distribution of elements over the thickness of diffusion layers were studied, and the nature of the change in the concentration of alloying elements on the surface of diffusion layers depending on the content of elements in the saturing mixtures was determined.

According to the concentration curves obtained by means of the MAR-1 microroentgenospectral installations, the coefficients of chromium diffusion in a solid solution with a varying aluminum content in it were calculated. It

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USSR

VORONTSOVA, L. A., et al., Alyuminiy i Alyuminiyevyye Splavy v Elektrotekhnicheskikh Izdeliyakh, Moscow, Energiya Press, 1971, 224 pages

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216

USSR

UDC 539.23

ARTYUSHCHENKO, I. I., and ZEMSKOV, G. V., Odessa

"Precipitation of Aluminum From the Gaseous Phase"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 3, May-Jun 71, pp 34-37

Abstract: Results are reported of an investigation of the building up of aluminum coatings on steel and titanium by means of thermal dissociation of vapors of organic aluminum compounds (triisobutyl aluminum) and their subsequent heat treatment (280-300°C). The coating thickness increases with increasing vapor concentration in the gaseous mix and increasing duration of aging. As a result of annealing steel specimens with aluminum coating in a shielding hydrogen atmosphere, diffusion calorized layers develop on their surface which increase considerably the heat resistance of steel. The described calorization method is recommended for improving the heat resistance of steel and titanium. Five figures, five bibliographic references.

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Coatings

USSR

UDC 669.293.84

ZEMSKOV, G. V., KOGAN, R. L., LUKYANOV, R. M., and LUKYANCHENKO, YE. M., Odessa

"Diffusion Surface Alloying of Niobium with Chromium, Titanium, and Silicon"

Moscow, Izvestiya Akademii Nauk SSSR -- Metally, No 5, 1970, pp 224-226

Abstract: This paper contains an investigation of the process of formation of coatings on VN-2 niobium alloy with diffusion saturation of it by chromium, titanium, and silicon. The diffusion surface alloying was performed in a mixture of powdered saturating elements with addition of a case-hardening element. The alloy was saturated simultaneously with chromium and titanium and then silicon. The process of diffusion surface alloying was studied at various temperatures (1,000-1,200°C) and various saturation periods (1-15 hours). The distribution of the saturating elements and niobium with respect to depth of the diffusion layers was studied by the methods of microstructural analysis, x-ray micrography, and microradiography.

During simultaneous diffusion of chromium, titanium, and silicon into VN-2 alloy, as a result of the mutual effect, variation of the depth of diffusion of the elements and also the nature of their distribution in a layer by

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USSR

ZEMSKOV, G. V., et al, Izvestiya Akademii Nauk SSSR -- Metally, No 5, 1970, pp 224-226

comparison with the single-component saturation process is observed. In the case of complex alloying of the surface of niobium alloys in order to obtain multicomponent phases in the coating, it is necessary to select the process parameters so as to insure identical depth of diffusion of the saturating elements. A figure is presented which illustrates the effect of the temperature and duration of the titanium-chromizing and siliconizing processes on the depth of diffusion of the alloying elements into the alloy. From this figure it is clear that increasing the titanium-chromizing process temperature is favorable since it effectively increases the depth of penetration of chromium into the diffusion layer.

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UDC: 621.793.1:669.718

ZEMSKOV, G. V., and ARTYUSHCHENKO, I. I., Odessa Polytechnic Institute

"Deposition of Aluminum From the Gas Phase"

Moscow, Zashchita Metallov, Vol. 6, no. 4, Jul-Aug 70, pp 473-474

Abstract: Aluminum coatings may be deposited on any material, including nonmetals, capable of withstanding heat up to 300°C by the use of thermal degradation of vapors of organoaluminum compounds at relatively low temperatures. Triisobutylaluminum, a colorless liquid with a boiling temperature of 200°C, was used as the initial organoaluminum compound (OAC). The process is of an adsorption-catalytic type and the increase in OAC vapor concentration in the gas mixture raises the deposition rate to a certain value. At a lower velocity of the gas flow the extent of metal extraction from OAC is greater but the coating is not uniform over the length of the specimen. Apparently, coating uniformity requires a flow of specific turbulence. Optimum results were obtained with a steel substrate temperature within 280--300°C. A coating cannot be produced at 260°C and below. An increase in temperature causes hydrocarbon dissociation; carbon

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which hinders the formation of an aluminum coating is liberated on the surface of the metal. Coating uniformity is promoted by constant temperature along the length of the specimen. Diffusion annealing raises the heat resistance of coatings. Interdiffusion of elements at metal interface provides strong cohesion of the coating with the base. The aluminum coating is nonporous, dense, and plastic. The advantage of the method is a high metal deposition rate, moderate processing temperature, and the possibility of coating a variety of materials. The method may be used to produce coatings at temperatures below the recrystallization point of the metal or the alloy.

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Acc. Nr: AP0049169 Abstracting Service: CHEMICAL ABST. 5-70 Ref. Code: UR0080

104190q Mechanism of the reaction of organometallic compounds on the surface of activated carbon. Zemskov, I. F.; Stepanov, A. S. (Kalinin. Politekh. Inst., Kalinin, USSR). *Zh. Prikl. Khim.* (*Leningrad*) 1970, 43(1), 189–92 (Russ). Some reactions of the title compds., including $PbEt_4$ (I), $SnEt_4$ (II), $HgEt_2$ (III), and EtHgCl (IV), adsorbed on activated carbon (V) were investigated. When air–I or II mixts. passed through columns of V, I and II reacted at the surface with O from the mixt. and were decompd. in the process. This increased the adsorbtive capacity of V towards I and II. Treatment of V satd. with I with Cl or ozone accelerates the decompn. of adsorbed I. III and IV do not react with atm. O on the surface of V. When adsorption of I–IV is made in the presence of ozone, only the content of adsorbed I is increased, due to its oxidizability.
I. Haiduc

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REEL/FRAME
19800976

UDC 621.357.035.621.79.027(088.8)

KONDAT'YEV, A. B., MASLENNIKOV, P. N., KONDRAT'YEV, V. P., ZEMSKOV, O. A., DANILOV, O. M., and ZENNIN, V. V.

"Apparatus for the Electrochemical Treatment of Small Diameter Holes"

USSR Author's Certificate No 284879, Filed 25 Jun 68, Published 6 Mar 72 (from Referativnyy Zhurnal -- Khimiya, No 21(II), 1972, Abstract No 21I288P by A. D. Davydov)

Translation: The new patented apparatus contains a tank for electrolyte, the power source, and a cathode in the shape of a thin rod. It is suitable for the treatment of small diameter holes in items made of low-magnetic alloys such as VK6, VK8, and VK15. It differs from other similar apparatus by the presence of a magnetic lens (in a shape of the shielded coil), with the cathode-instrument placed within its field. The cathode is made of paramagnetic material, in order to prevent the concentration of magnetic power lines in it.

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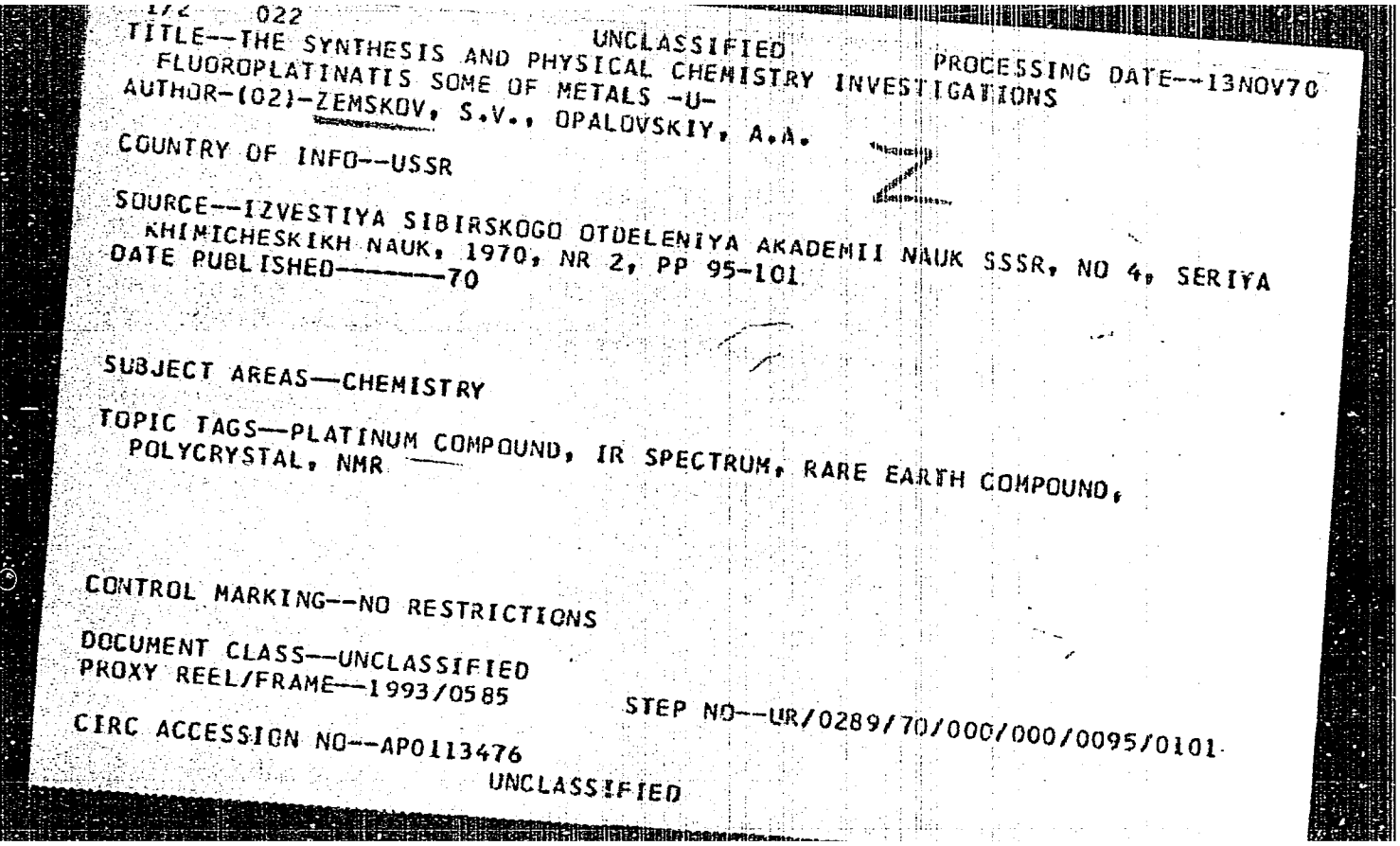

1/2 022 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--THE SYNTHESIS AND PHYSICAL CHEMISTRY INVESTIGATIONS FLUOROPLATINATIS SOME OF METALS -U-
AUTHOR-(02)-ZEMSKOV, S.V., OPALOVSKIY, A.A.

COUNTRY OF INFO--USSR

SOURCE--IZVESTIYA SIBIRSKOGO OTDELENIYA AKADEMII NAUK SSSR, NO 4, SERIYA KHIMICHESKIKH NAUK, 1970, NR 2, PP 95-101
DATE PUBLISHED----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PLATINUM COMPOUND, IR SPECTRUM, RARE EARTH COMPOUND, POLYCRYSTAL, NMR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1993/0585 STEP NO--UR/0289/70/000/000/0095/0101

CIRC ACCESSION NO--AP0113476
UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0113476
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS PAPER DEALS WITH THE RESULTS OF STUDIES ON ALKALI, ALKALI EARTH, AND RARE EARTH FLUOROPLATINATES SYNTHESIS AND ON STRUCTURAL PECULIARITIES OF THESE COMPOUNDS BY NMR OF F. SIMULTANEOUSLY THE ABOVE COMPOUNDS WERE STUDIED BY THE UR AND DTA METHODS. IT WAS FOUND THAT BY MEANS OF VARYING THE TEMPERATURE IT WAS POSSIBLE TO OBTAIN ALKALI, ALKALI EARTH, AND RARE EARTH FLUOROPLATINATES AS WELL AS FLUOROPLATINATES OF SILVER, COPPER AND IRON WITH APPROXIMATELY 100PERCENT YIELD BY THE ACTION OF GASEOUS CHLOROTRIFLUORIDE ON RESPECTIVE CHLOROPLATINATES. THE NMR F STUDY OF POLYCRYSTALLINE SPECIMENS OF THE OBTAINED COMPOUNDS ALLOWED FOR THE FIRST TIME TO CONFIRM EXPERIMENTALLY NONEQUIVALENCE OF THE POLAR AND EQUATORIAL FLUORIDE LIGANDS IN OCTAHEDRAL COMPLEXES OF PLATINUM (IV). THE ANALYSIS OF THE UR SPECTRA OF THE OBTAINED COMPOUNDS HAVE CONFIRMED THE NMR F DATA OF OCTAHEDRON DISTORTION IN HEXAFLUOROPLATINATES.
FACILITY: INSTITUT NEORGANICHESKOY KHIMII SO AN SSSR, NOVOSIBIRSK.

UNCLASSIFIED

ZEMSKOV, V. M.

SO: JPRS 54539
23 NOV 71

UDC: 612.017.1.014.482

SPECIFIC IMMUNITY TO SMALL DOSES OF GAMMA RAYS IN DOGS AFTER 2-4-YEAR EXPOSURE (IMMUNOLOGICAL AND IMMUNOCYTOCHEMICAL ANALYSIS)

[Article by I.V. Konstantinova, A.S. Skryabin, V.M. Zemskov, Yu.K. Veysfeyler, [illegible], E.S. Vasil'yev, A.A. Markelov; Moscow, Vestnik Akademii Meditsinskikh Nauk SSSR, Russian, No 10, 1971, pp 22-29]

Galactic cosmic irradiation the cumulative dosage of which, according to estimates, could constitute 50-100 rem [roentgen equivalent man] over a one-year flight and acute recurrent exposure to solar corpuscular irradiation in a dosage of 3-50 rem per burst (V.G. Bobkov et al.; Schaefer) are factors that are continuously present during prolonged space flights. The prognosis of man's condition under these conditions and substantiation of levels of permissible exposure of cosmonauts during prolonged space flights constitutes a rather complex problem.

The mechanisms of onset of radiation sickness after exposure to relatively large doses of ionizing radiation have been studied in numerous investigations. There are many works dealing with immunological reactivity under such conditions, and they have been summarized in monographs and textbooks (R.V. Petrov; N.N. Klemparskaya et al.; V.L. Troitskiy et al., and others). Yet the changes in immunological processes in the organism referable to exposure to small doses of ionizing radiation have not been investigated sufficiently.

It has been demonstrated that 4-5 months after fractional or continuous exposure to 1.3-3.5 rem daily there is a significant decrease in immunity to infections (P.N. Kiselev and P.A. Buzini; D.R. Kaulen; E.K. Dzhikidze).

In the present investigations, some manifestations of specific immunity were analyzed during a unique complex chronic experiment.

A large group of dogs has been continuously exposed to gamma rays (cobalt 60) for several years. For the first three years of the experiment the animals were exposed to radiation such as could be present for the crew of a spacecraft during a flight from the earth to Mars and back to earth, provided the radiation conditions are relatively stable ["calm"] (Yu.G. Grigor'yev et al.)

UDC 612.017.11

USSR

ZEMSKOV, V. M., Institute of Biomedical Problems, USSR Ministry of Health, Moscow

"Synthetic Polynucleotides as Nonspecific Stimulants of the Immune System"

Moscow, Uspekhi Sovremennoy Biologii, Vol 76, No 1(4), Jul-Aug 73, pp 3-20

Abstract: Review of recent literature emphasizes the importance and attention given to synthetic two stranded polyribonucleotides in connection with their anti-tumor properties and induction of interferon production. Definitive conclusions regarding their use in medicine are hindered by the many contradictory reports, need for more complete studies, and side effects. Among the findings that have come to light is that poly IC, poly AU, and poly GC act as potent adjuvants and may be successfully used to elicit antibody response against weak antigens. Polynucleotides have already been used successfully in man for the induction of interferon production in cases of influenza and, hopefully, this will be expanded to other acute upper respiratory infections. The nonspecific antiviral properties exhibited by the polyribonucleotides are probably largely due to stimulation of interferon synthesis and release of preformed interferon. However, numerous studies, particularly with poly IC, show these substances to stimulate antibody

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ZEMSKOV, V. M., Uspekhi Sovremennoy Biologii, Vol 76, No 1(4), Jul-Aug 73, pp 3-20

synthesis -- at least partly due to their adjuvant action -- and this may also account for their antiviral and antitumor activities. In addition, immunological studies conducted with thymectomized mice have shown that poly AU may replace T cell, and it has also been shown that h this polynucleotide causes the release of antibody from immunocytes in vitro.

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UDC: 612.017.11.014.46:612.398.145.1

USSR

ZEMSKOV, V.M.

"Increasing Resistance of Mice to Infection With Heterologous RNA"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 2, 1970, pp 33-37

Abstract: Administration of yeast RNA to mice 18-20 hours before inoculating them with Salmonella abortus equi increased their resistance to the disease. The effect lasted 2-3 days, but persisted much longer in previously vaccinated animals. Administration of RNA to previously vaccinated mice raised their immunity to a level equal to that created by two vaccinations a month apart. Simultaneous administration of RNA and vaccination did not stimulate immunogenesis.

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Acc. Nr: AP0043868 Ref. Code: UR 0016

PRIMARY SOURCE: Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, 1970, Nr 2, pp 33-37

AN INCREASE OF ANTIINFECTIOUS RESISTANCE IN MICE WITH THE AID OF HETEROLOGOUS RNA

V. M. Zemskov

Preliminary (18 to 20 hours before infection with S. abortus equi) administration to intact mice of yeast RNA conditioned elevation of their antiinfectious resistance. Stimulation of resistance in such a scheme of RNA administration was more pronounced in immune animals. In intact animals the stimulating effect lasted two to three days, and in the immunized ones — much longer. Administration of RNA to mice which were vaccinated before (once) led to production of the same immunity as double (at an interval on one month) immunization with the vaccine alone.

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REEL/FRAME
19770292

1/2 011 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--EFFECT OF ZINC CONCENTRATION ON ITS DISTRIBUTION COEFFICIENT IN INDIUM ANTIMONIDE -U-

AUTHOR-(02)-BELAYA, A.D., ZEMSKOV, V.S.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(2) 2377-8

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ZINC, ISOTOPE, CRYSTALLIZATION, INDIUM ANTIMONIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0549 STEP NO--UR/0363/70/006/002/0377/0378

CIRC ACCESSION NO--AP0105534

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105534

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONSIDERABLE DECREASE OBSD. IN THE DISTRIBUTION COEFF. OF ZN BETWEEN THE LIQ. AND THE SOLID PHASES CAN BE EXPLAINED BY THE FACT THAT CRYSTN. OF THE SOLID PHASE UNDER DRAWING TAKES PLACE UNDER NONEQUIL. CONDITIONS. IN THE PRESENT WORK, THE RATE OF DRAWING OF CRYSTALS OF SOLID SOLNS. OF ZN IN IN ANTIMONIDE WAS 0.038 MM- MIN. WHILE THE RATE OF ROTATION WAS 120 RPM. THE CRYSTALS WERE GROWN IN THE BETA (111) DIRECTION. THE ZN WAS INTRODUCED AS THE RADIOACTIVE ISOTOPE PRIME6 5ZN. THE INTERACTION BETWEEN THE COMPONENTS, APPARENTLY, EXERTS A SIGNIFICANTLY LARGER EFFECT ON THE DISTRIBUTION COEFF. OF ZN THAN HAS BEEN HERTOFORE SUPPOSED. THE TENDENCY OF ZN AND SB TO FORM BINARY COMPDS. CANNOT HELP BUT AFFECT THE DISTRIBUTION COEFF. PRESUMABLY, THE COMPLEX CHANGE OF THE DISTRIBUTION SHOULD BE REFLECTED IN THE CORRESPONDING NATURE OF THE LIQUIDUS AND SOLIDUS.

UNCLASSIFIED

in its work were 280 representatives of various organizations
our country and also scientists from East Germany, Poland,
Romania. More than 100 reports were heard and discussed.

At the conference the main attention was given to the physicochemical aspects of the alloying of single crystals and epitaxial layers of semiconductors during their growth from fusions, solution-fusions and the gaseous phase. The consideration of processes of ionic and radiation alloying proceeded on the same level.

The presented reports showed a considerable increase in the number of semiconducting substances on which processes of alloying are being studied--besides germanium and silicon, compounds of the type of $A^{III}B^{V}$, especially GaAs, InAs, InSb, GaSb and solid solutions based on them. Works appeared on the alloying of compounds of the type $A^{II}B^{IV}C^{V}$, silicon carbide, artificial diamond, selenides and tellurides of the second and fourth groups of D. I. Mendeleyev's periodic system of the elements. Studies have been made of the behavior of alloying additives donor and acceptor types when they are introduced simultaneously into germanium, silicon and $A^{III}B^{V}$ compounds (GaAs and GeAs). In the investigation of the impurity levels and the character of the interaction of impurities with one another and the matrix, such methods have begun to be used as electron paramagnetic resonance, Mossbauer spectroscopy, photo and cathodoluminescence, study of transmission spectra, absorption and reflection, and electron microscopy. The productiveness of these methods was convincingly demonstrated in the reports of D. N. Nasledov and co-authors on questions of the state of transition elements of the iron group in solid solutions based on GaAs and InSb. The state of tellurium atoms in InAs, InSb and GaSb was studied by emission Moessbauer spectroscopy (B. I. Boltaks et al.). the interaction of iron with defects in single crystals of silicon by the EPR method (L. S. Milevskiy et al), and the interaction of alloying components with the matrix during the heat treatment of GaAs alloyed with Sn, Ge and Si by electron microscopy (M. G. Mil'vidskiy et al). Using transmission electron microscopy, M. Sorokin traced different stages of the decomposition of a solid solution of oxygen, antimony and silicon, characteristic not only by the appearance of a second phase but also by the development of corresponding defects of the crystal lattice. In the report B. I. Boltaks gave a survey of methods of obtaining compensated silicon, including by alloying with rapidly diffusing elements which give deep levels in the silicon -- copper, silver, iron, etc. Of interest was the report of M. S. Margalevskaya et al on study of the connection of the limiting concentration of electrons in strongly alloyed $A^{III}B^{V}$ with the band structure of those compounds.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002203730010-3"

In the discussion of questions relating to diffusion, very much attention was given to diffusion processes taking place during the growth of layers of silicon. Not only the character of the distribution of the alloying additives but also the defects of the crystal lattice arising in the process of diffusion were examined. A. S. Lyutovich showed in his report the existence of influence of structural defects on the distribution of the alloying additives. Reports were heard on the dependence of the diffusion of Zn and Cu in GaAs on the nonequilibrium vacancies (B. I. Boltaks) and on the mutual influence of impurities on their distribution in a semiconductor during diffusion (V. A. Uskov). In work on diffusion, methods of radioactive isotopes and radioactivation analysis are being used more and more widely.

A number of reports dealt with the heat treatment and epitaxy of alloyed semiconductors. V. I. Fistul' characterized distinctive features of the kinetics of decomposition of a supersaturated solid solution of Cu and Ni in Ge in the presence of donor and acceptor impurities. In the reports of I. S. Smirnov, E. N. Nasledov, V. A. Kharchenko et al. light was shed on the dependence of the properties of semiconductors alloyed by ionic bombardment or neutron irradiation on the conditions of heat treatment. They revealed physicochemical nature of the processes taking place during the heat treatment of such semiconductors, and also the role of treatment in the interaction of alloys of alloying elements with each other and defects of the crystal lattice of the semiconductor

Also reported were the results of study of the influence of the kinetics of the growth of layers and crystals of semiconductors on their alloying. One should note here especially the report of L. G. Lavrent'yeva. She established a connection between the micromorphology of the growing surface of the epitaxial layer of GaAs and the level of alloying during the growth of GaAs by the gas-transport method. As it turned out, the entry of impurities in the growing layer depends on the polarity of the used GaAs backing and correlates with change of the rate of growth, and this permits explaining the mechanism of alloying of the growing epitaxial layer on the basis of the theory of crystal growth. The influence of the orientation of the backing on the distribution of the alloying element in a GaAs layer grown by the method of liquid epitaxy was demonstrated in the report of U. M. Kulich. Yu. G. Silorok pointed out the dependence of the concentration of impurities dissolved in a semiconductor on the electron-hole equilibrium in the semiconductor in the process of obtaining GaA by the chloride method. M. R. Greysukh proposed taking that equilibrium into consideration in studying the nonequilibrium capture of impurities which occurs during the crystallization of semiconductors from fusions.

The reports of F. M. Shurygin, A. L. Gurskiy, Yu. N. Grazhdankov et al were devoted to the influence of the dissociation of fluxes used in obtaining alloyed InAs and AVBVI on the properties of the semiconductors. It turned out that uncontrolled impurities can go from the flux into the semiconductor, in which case the kinetics of transition depend on the conditions of growth.

An important place in the theory of alloying of semiconductors is occupied by investigations of the equilibrium between the phases and interaction of components in systems consisting of a semiconductor and alloying components. Those investigations, conducted by means of physicochemical analysis, permit correctly arriving at an understanding and solution of practical questions about the alloying of semiconductors. At the conference a number of reports were presented on study of $A^{III}B^{V}$-$A^{II}B^{VI}$ systems in which the A^{II} and B^{VI} elements are donors and acceptors respectively. V. M. Glazov, who studied the donor-acceptor interaction between alloying A^{II} and B^{VI} elements in the systems InP-ZnTe and InP-CdTe, established the mutual elements of groups II and VI on their solubility in InP, which is explained by the formation of electroneutral complexes of the type $A^{II}B^{VI}$. V. S. Zemskov, on the basis of analysis of the results of study of change of the distribution coefficients of Zn and Te in InSb, showed that the principal mechanism of interaction between the alloying additives is an electron-hole interaction, and the ZnTe compound dissociates. E. N. Khabarov et al conducted physicochemical investigations of $A^{III}B^{V}$-$A^{II}B^{VI}$ systems and proposed criteria for the formation of continuous solid solutions in those systems. They regard the compounds $A^{III}B^{V}$ and $A^{II}B^{VI}$ as isovalent and isostructural "complexes" and, starting from those concepts, propose a model of solid solutions. M. Ya. Dashevskiy, on the basis of data obtained in mass-spectroscopic analysis, established a correlation between the structure of the vapor and liquid phases of InSb and GaAs alloyed with Te or Se.

While noting the increasing volume and rising level of experimental work on the study of alloying, one should at the same time point out the possibility of further development of the theory of those processes. In the resolution of the conference there was emphasis of the need for fundamental generalization of the accumulated experimental data -- on a number of important questions, above all on such questions as solubility, the decomposition of solid solutions, and the interaction of point defects.

It was decided to hold the third conference on this problem in 1974.

1/2 037 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--INTRINSIC CARRIER CONCENTRATION ON HEAVILY DOPED P TYPE GERMANIUM -U-

AUTHOR-(02)-BRYKSIN, V.A., ZEMSKOV, V.S.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA I TEKHN. POLUPROV., APR. 1970, 4, (4), 791-793

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--METAL COATING, GERMANIUM SEMICONDUCTOR, ALUMINUM, HALL EFFECT, ELECTRIC CONDUCTIVITY, CARRIER DENSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/0149 STEP NO--UR/0449/70/004/004/0791/0793

CIRC ACCESSION NO--AP0129405

UNCLASSIFIED

2/2 037 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0129405

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF HEAVY DOPING ON THE INTRINSIC CARRIER CONCENTRATION IN P TYPE GE WAS STUDIED AS A CONTINUATION OF AN EARLIER INVESTIGATION (IBID., 1969, 3, 96) TO HIGHER LEVELS OF DOPING. THE DOPING ADDITIVES ON THIS OCCASION ALSO INCLUDED AL AND AL PLUS GE. THE CARRIER CONCENTRATION WAS DERIVED FROM MEASUREMENTS OF HALL EFFECT AND ELECTRICAL CONDUCTIVITY. DOPING SUBSTANTIALLY INCREASED THE INTRINSIC CARRIER CONCENTRATION (BY A FACTOR OF 3 OR MORE). THE MECHANISM RESPONSIBLE FOR THIS EFFECT IS CONSIDERED.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002203730010-3"

USSR UDC 539.287

AKANAYEV, B.A., ZEMSKOV, YE. M., TERESHCHENKO, V.N., MOSHKAREVA, N.A.

"On Stimulated Combination Scattering In SF_6"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 5(11),1972, pp 88-90

Abstract: The preliminary results are presented of experimental studies of the processes of stimulated combination (Raman) scattering in liquid SF_6 at room temperature and a saturating vapor pressure of 23 kg/cm^2. It is noted that SF_6 was selected as an object of study because this substance has a number of properties which are advantageous during experimentation: increased chemical stability and inertia, high elastic strength, optical transparency and sufficient uniformity in the visible and infrared regions of the spectrum. A ruby laser with a modulated figure of merit and one stage of amplification was used as a pumping source. The system made it possible to obtain a radiation pulse of 50 nanosec duration, with an energy up to 4,5 joule, a wide spectrum to 0.02μ, and a divergence with respect to a level of half theenergy equal to 4.10^{-2} rad. The excitation threshold of the first and second Stokes components were found to be 18 and 30 Mw/cm^2, respectively. Curves are presented which show the conversion

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AKANAYEV, B. A., et al., Kvantovaya elektronika, No 5(11), 1972, pp 88-90

of pumping radiation into the Stokes components of stimulated combination scattering. The author thanks A.Z.Grasyuk for critical observations and attention to the work.2 fig.3 ref.Received by editors,15 Feb 1972;after revision,6 July 1972.

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USSR

UDC 616.981.452-084.47

AGAFONOV, V. I., BASKIN, Ye. I., VDOVIN, D. G., VOROBEYCHIKOV, V. M., VOROB'YEV, A. A., GANLESHKO, Kh. P., GAPOCHKO, K. G., GEFEN, N. Ye., YEVSTIGNEYEV, V. I., YEMEL'YANOVA, O. V., ZEMSKOV, Ye. M., IMANALIYEV, O. G., KAMALOV, I. I., KVIRIKADZE, V. V., KUTYREV, P. A., MISHIKOV, O. P., PUSHKAREV, V. P., and ROZDESTVENSKIY, D. A., Military Medical Academy imeni S. M. Kirov, Leningrad

"A Comparative Efficiency Characteristic of Different Immunization Methods Against Plague Infection"

Moscow, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 11, 1972, pp 106-112

Abstract: Analysis of the available literature data led to the conclusion that oral, aerogenic, and jet immunization methods are the most efficient compared with subcutaneous and skin methods. The average number of patients inoculated against plague infection was 517, 817 (419), and 937 per hr for jet injectors, aerogenic method liquid and dry vaccine, and oral method (tablets), respectively, compared with only 43 and 28 for the subcutaneous and skin methods, respectively.

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1/2 025 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--MECHANICAL QUENCHING OF THE LIGHT YIELD OF LIQUID SCINTILLATORS -U-

AUTHOR-(04)-ZEMSKOVA, I.I., ZHILTSOVA, L.YA., MATVEYEVA, YE.N., TYMINSKIY, V.G.

COUNTRY OF INFO--USSR

SOURCE--PRIB. TEKH. EKSP. 1970, 1, 83-4

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--FLUID SCINTILLATION, LUMINESCENCE QUENCHING, QUANTUM YIELD, IRON POWDER, TOLUENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/0538 STEP NO--UR/0120/70/001/000/0083/0084

CIRC ACCESSION NO--AP0117768

UNCLASSIFIED

2/2 025 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0117768

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DATA ARE GIVEN FOR DETN. OF QUENCHING FLASHES OF A LIQ. SCINTILLATOR BASED ON TOLUENE BY POWD. FE AND CU. IF N IS THE NO. OF READINGS IN A GIVEN TIME AND C IS THE CONCN. OF THE QUENCHING MATERIAL, IT IS POSSIBLE TO DERIVE AN EQUATION C EQUALS C SUBONE HALF IN (N SUBO-N)-0.693, WHERE C SUBONE HALF IS THAT CONCN. OF THE QUENCHING MATERIAL AT WHICH THE LUMINESCENCE YIELD DIMINISHES TO HALF OF THE INITIAL VALUE, AND N SUBO IS THE NO. OF READINGS WITHOUT THE QUENCHING MATERIAL. COMPARISON OF THE LIGHT YIELD OF A STD. LIQ. SCINTILLATOR WITH THAT OF A CONTAMINATED ONE PERMITS TO DET. THE AMT. OF QUENCHING MATERIAL PRESENT WITH AN ACCURACY OF SIMILAR TO 10 PRIME NEGATIVES G. FACILITY: OB'EDIN. INST. YAD. ISSLED., DUBNA, USSR.

UNCLASSIFIED

USSR

BRODER, D. L., GAMALIY, A. F., ZEMTSEV, B. V., NESTEROV, B. V., and KHAM'YANOV, L. P. (Institute of Physics and Power Engineering)

"Gamma Radiation Upon Capture of Thermal Neutrons by Isotopes of Cr"

Moscow, Yadernaya Fizika, Vol 13, No 2, 1971, pp 233-239

Abstract: This work is devoted to the study of the spectra of gamma radiation arising upon capture of thermal neutrons by Cr isotopes, by means of a Ge-Li gamma spectrometer. The isotopes of chromium studied are Cr^{50}, Cr^{52}, and Cr^{53}. The yield of gamma lines per 100 captures of neutrons in each isotope are determined. Diagrams of the energy levels of Cr^{51}, Cr^{53}, and Cr^{54} nuclei are presented. The results are compared with the data of other authors. In general the data agree well with the data of recent works concerning the energy of individual gamma lines, but not as well concerning their yield. A number of new gamma lines are observed, particularly for Cr^{50} and Cr^{52}.

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USSR

UDC:629.7.036.3:002.3

ZEMTSOV, A. G.

"Optimal Adjustment of Parameters of a Turbojet Engine in the 'FD' and 'FM' Modes"

Dokl. 2-y Resp. Nauch.-Tekhn. Konf. po Metrologii 27-29 Noyabrya 1972 G. Ch. 1, Tbilis. Fil. VNII Metrologii [Report of Second Republic Scientific-Technical Conference on Metrology, 27-29 November, 1972, Part 1, Tbilisi Affiliate, All-Union Scientific Research Institute for Metrology], Tbilisi, 1972, pp 311-321 (Translated from Referativnyy Zhurnal Aviatsionnyye i Raketnyye Dvigateli, No 11, 1973, Abstract No 11.34.105, from the resume)

Translation: An algorithm is produced for adjustment of a turbojet engine. In the "FD" and "FM" [expansion of abbreviations unknown] the following parameters are adjusted: thrust (R), high-pressure rotor speed (n), temperature before turbine (T_3), temperature after turbine (T_4), specific fuel consumption (G_R) and air excess factor (α). The parameters are adjusted by two regulating elements:

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ZEMTSOV, A. G., Dokl. 2-y Resp. Nauch.-Tekhn. Konf. po Metrologii 27-29 Noyabrya 1972 G. Ch. 1, Tbilis. Fil. VNII Metrologii, Tbilisi, 1972, pp 311-321

a change in cross section of the nozzle apparatus by movement of flaps in the "F" mode or a change in the diameter of the jet nozzle in the "F" min (1) mode, by changing the position of the air-feed needle in the fuel supply regulator (β). The essence of the problem of optimal adjustment consists in, using the available information on instantaneous values of the parameters, finding a position of the regulating elements which causes the parameters of the engine to approximate their maximum values within the field of tolerance according to the technical conditions. The engine adjustment algorithms are run by a control computer. 2 Figures; 3 Biblio. Refs.

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UNCLASSIFIED PROCESSING DATE--20NOV70

1/2 006

TITLE--AERATED CONCRETES -U-

AUTHOR-(05)-SHVARTZAYD, M.S., LAPARDIN, V.N., KRYZHANOVSKIY, B.B., LEONTYEV, YE.N., ZEMTSOV, D.G.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 267,427

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,

DATE PUBLISHED----------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--PATENT, CONCRETE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0482/70/000/000/0000/0000

PROXY REEL/FRAME--3002/1402

CIRC ACCESSION NO--AA0128801

UNCLASSIFIED

2/2 009 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AA0126801

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CELLULAR CONCRETES BASED ON GROUND QUICKLIME AND SILICEOUS COMPONENTS WERE PREPD. BY 2 STAGE MIXING OF THESE COMPONENTS. IN THE 1ST STAGE ALL DRY COMPONENTS WERE MIXED WITH THE ADDN. OF 70-100PERCENT WATER. THE MIXT. WAS ALLOWED TO STAND WHILE THE TEMP. WAS LOWERED TO 35-40DEGREES. THEN THE MIXT. WAS THIXOTROPICALLY THINNED BY PUTTING INTO IT A STEAM GENERATOR AND THE REMAINING WATER, AND THEN IT WAS MIXED A 2ND TIME. FACILITY: ALL UNION SCIENTIFIC RESEARCH INSTITUTE OF CONSTRUCTION MATERIALS AND CONSTRUCTION.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002203730010-3"

USSR

UDC: 550.834

ZEMTSOV, Ye. Ye., NEVINNYY, A. V., Krasnodar Affiliate of the All-Union Scientific Research Institute of Geophysical Prospecting Methods

"A Method of Plotting Seismic Cross Sections"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 36, Dec 71, Author's Certificate No 322743, Division G, filed 23 Mar 70, published 30 Nov 71, p 154

Translation: This Author's Certificate introduces a method of plotting seismic cross sections by controlled directional reception with mapping of a background of reflecting elements with respect to a common velocity dependence for the profile. As a distinguishing feature of the patent, the accuracy of boundary determination is improved by correcting the velocity model of the cross section in accordance with the position of a conventional stratum and continuing the correction until a subsequent change in the velocity model alters the configuration of the conventional stratum. The plotting of the cross section is done with the use of a common velocity dependence for the profile, which is then corrected in accordance with the configuration of the resultant reflecting boundaries.

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1/2 008 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--EFFECT OF PYROPHOSPHATES ON THE VECTOR POLAROGRAPHIC BEHAVIOR OF SOME IONS IN 1M PHOSPHATE SOLUTIONS -U-

AUTHOR-(02)-ZEMTSOVA, A.G., KAPLAN, B.YA.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK TADZH. SSR 1970, 13(3), 24-6

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHOSPHATE, POLAROGRAPHY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1655 STEP NO--UR/0425/70/013/003/0024/0026

CIRC ACCESSION NO--AT0118634

UNCLASSIFIED

2/2 008 UNCLASSIFIED PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AT0118634
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECTS WERE STUDIED OF PYROPHOSPHATE ADDITIVES (0.02 AND 0.2 MOLE-L.) TO M PHOSPHATE SOLNS. ON THE POLAROGRAPHIC BEHAVIOR OF DEPOLARIZERS ON CHANGING THE PH FROM 1.1 TO 14. THE OBTAINED DATA INDICATE SEVERAL ASPECTS OF INCREASING THE EFFICIENCY OF THE VECTOR POLAROGRAPHY OF PHOSPHATE SOLNS. BY MEANS OF PYROPHOSPHATE ADDITIVES. IN ADDN. TO INCREASING THE SENSITIVITY AS A CONSEQUENCE OF INCREASING THE REVERSIBILITY OF ELECTRODE REACTIONS (CU AT PH 3-7, TE AT PH 1-9, ETC.) OR BY DECREASING THE SLANT OF THE PEAK (GE(IV), FE(III)), THE PYROPHOSPHATE ADDITIVES CAN BE USED TO AVOID INTERFERENCES FROM MACROCOMPONENTS DURING DETN. OF TRACE COMPONENTS BY (A) SUPPRESSING THE POLAROGRAPHIC ACTIVITY OF THE FORMER, (B) BY INCREASING THE SOLY. OF THE FORMER, AND (C) BY INCREASING THE DIFFERENCE IN PEAK POTENTIALS. FACILITY: INST. KHIM., DUSHANBE, USSR.

UNCLASSIFIED

USSR

UDC 669.15.24.295:621.785.78

ZEMTSOVA, N. D., and MALYSHEV, K. A., Institute of Metal Physics, Academy of Sciences USSR

"Continuous Decomposition of γ -Solid Solutions in Iron-Nickel-Titanium Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 35, No 5, 1973, pp 1006-1014

Abstract: Rods 15 x 15 mm in size were prepared from N25KhT2 (C 0.03, Si 0.37, Mn 0.34, Cr 1.07, Ni 25.0, Ti 2.20, Al 0.23 weight percent) and N27T2 (C 0.04, Si 0.45, Mn 0.32, Cr 0.09, Ni 27.0, Ti 2.49, Al 0.06) alloys and homogenized at 1200°C. The resulting austenite consisted of approximately identical grains 1 mm in diameter. All samples were subjected to aging at 500-850°C for 1-50 hours. The microstructure of samples was studied by optical and electron microscopes. In the course of aging the γ -solid solution underwent decomposition, with the formation of clusters of the γ' phase and the appearance of cubic particles of the stable Ni_3Ti phase along slip planes produced by the heat treatment of samples. Aging at 800°C of annealed alloys could lead to a direct growth of the hexagonal tightly packed Ni_3Ti phase along the grain boundaries, subboundaries, and dislocations. The spherical particles

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USSR

ZEMTSOVA, N. D. and MALYSHEV, K. A., Fizika Metallov i Metallovedeniye, Vol 35, No 5, 1973, pp 1006-1014

of γ' phase which appeared in matrix during aging were transformed into lamellas of the Ni_3Ti phase with the Widmanstatten structure at the later stages of aging. A presence of chromium in these alloys accelerated this process because Cr decreases the critical size of nuclei on which the stable phase is formed.

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USSR

UDC 669.24'26:620.181

MALYSHEV, K. A., and ZEMTSOVA, N. D., Institute of Metal Physics, Academy of Sciences USSR

"Kinetics of Martensite Transformation and Martensite Morphology in Alloy N25KhT2 After Aging"

Moscow, Metallovedeniye, No 9, Sep 72, pp 38-43

Abstract: The effect of prior aging on the kinetics of martensite transformations and martensite morphology in Fe-Ni-Ti alloys was investigated. The study was made on the N25KhT2 metastable austenitic alloy (0.03% C, 0.37%Si, 0.34% Mn, 1.07% Cr, 25.0% Ni, 2.2% Ti and 0.23%Al). Forged ingots were double quenched from 1000°C with intermediate cooling in liquid nitrogen to obtain a uniform recrystallized austenite grain. The effect of aging conditions on the kinetics of martensite transformation in the N25KhT2 alloy can be explained by the change of mutual positioning of the temperature intervals of isothermal and athermal transformations. In a hardened unaged alloy the interval of isothermal transformation lies between -170 and -110°C, and the M_S point of athermal transformation lies at -140°C. In the processing of soaking at temperatures above -140° C, only the isothermal transformation takes place; below -140°C a mixed transformation occurs, whereupon the athermal transformation starts sooner than the isothermal one. Aging at 500-550°C stabilizes the

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MALYSHEV, K. A. and ZEMTSOVA, N. D., Metallovedeniye, No 9, Sep 72, pp 38-43

austenite and prevents the isothermal martensite transformation. Thus in the N25KhT2 alloy the kinetics of martensite transformation and morphology of martensite may differ and depend on the stabilization or destabilization of austenite during aging. 10 figures, 8 bibliographic references.

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USSR

UDC 547.26'118

ZEMYLANSKIY, N. I., and GORAK, R. D., L'vov State University imeni I. Franko

"Diselenophosphoric Acids and Their Salts"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 8, Aug 71, pp 1691-1693

Abstract: The reaction of phosphorus pentaselenide with alcohols proceeds mainly according to the Pichchimuka scheme suggested for phosphorus pentasulfide

$$P_2Se_5 + 4ROH \longrightarrow 2(RO)_2P(Se)SeH + H_2Se$$

In the case of R=C_6H_5 it is possible to isolate free 0,0-diphenyldiselenophosphoric acid, which is stable in air. No free acid can be isolated in the case of R=CH_3, C_2H_5, n-iso-C_3H_7, n-C_4H_9. In all cases the authors isolated potassium salts from the reaction mixture by neutralization of the acid with potassium ethoxide. The exchange reaction of potassium salts of 0,0-dialkyl-(phenyl)diselenophosphoric acids with nickel and cobaltous chloride gives stable nickel and cobalt salts of 0,0-dialkyl(phenyl)diselenophosphoric acids. Ferrous, cupric and manganous salts when treated with potassium salts of 0,0-dialkyl(phenyl)diselenophosphoric acid form selenites instead of the expected diselenophosphites.

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1/2 021 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--SYNTHESIS OF UNSYMMETRICAL ORGANOTIN COMPOUNDS -U-

AUTHOR-(03)-MELNICHENKO, L.S., ZEMYLANSKIY, N.N., KOCHESHKOV, K.A.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(3), 597-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANOTIN COMPOUND, ORGANOLITHIUM COMPOUND, CHEMICAL SYNTHESIS, UV LIGHT, THERMAL DECOMPOSITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/1563 STEP NO--UR/0020/70/190/003/0597/0599

CIRC ACCESSION NO--AT0100181

UNCLASSIFIED

2/2 021 UNCLASSIFIED

CIRC ACCESSION NO--AT0100181 PROCESSING DATE--18SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REACTION OF PHLI WITH RSNCL SUB3 IN ET SUB2 O AT MINUS 20DEGREES GAVE ETPH SUB3 SN AND BUPH SUB3 SN. KEEPING 2 MOLES ETSNCL SUB3 AND 1 MOLE ETPH SUB3 SN IN UV LIGHT 2.75 HR AT SMALLER THAN 35DEGREES GAVE 90.9PERCENT ETPHSNCL SUB2, M. 66DEGREES, ALSO FORMED FROM THIS MIXT. I 1.5 HR AT 140DEGREES. SIMILARLY BUSNCL SUB3 AND BUPH SUB3 SN GAVE 90.3PERCENT BUPHSNCL SUB2, M. 50DEGREES. AT ROOM TEMP., THE REACTION IS SLOW AND REQUIRES 5 DAYS FOR 65PERCENT CONVERSION. ETPHSNCL SUB2 AND AQ. KF GAVE 95PERCENT ETPHSNF SUB2, DECOMPD. LARGER THAN 300; BUPHSNF SUB2, DECOMPD. LARGER THAN 250DEGREES, WAS PREPD. SIMILARLY. BUPHSNF SUB2 AND PHLI IN ET SUB2 O AT MINUS 25DEGREES GAVE 92.7PERCENT BUPH SUB3 SN, M. 61DEGREES.

UNCLASSIFIED

USSR

UDC:621.791.052.01:620.192.4:669.15-194

SHRON, R. Z., NIKANOROVA, N. I., KRECHET, L. E., Urals Heat-Engineering Institute, ZEMZIN, V. N. and ZHITNIKOV, N. P., Central Boiler and Turbine Institute

"Influence of Dispersion Hardening on the Tendency of Welded Joints in Chrome-Molybdenum-Vanadium Steels Toward Brittle Rupture at High Temperatures"

Moscow, Svarochnoye Proizvodstvo, No 12, Dec 73, pp 1-3

Abstract: This work studies the influence of dispersion hardening on the ductility and tendency toward brittle rupture at high temperatures of welded joints in steels types 12Kh1MF and 15Kh1M1F. This study showed the influence of dispersion hardening in heated areas on the tendency of these alloys to local brittle ruptures during heat treatment and use in the untempered and low-tempered states. Heat treatment with high tempering increases ductility and the brittle-rupture resistance of these alloys. To prevent brittle rupture, the holding temperature of steam pipes during heat treatment should be at least 720° C.

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USSR

UDC 621.791.019

ZEMZIN, V. N., Central Committee of Heavy Industry, and ZHITNIKOV, N. P., Kirov Plant

"Fracture Conditions in the Near-Seam Zone of Welded Joints in Heat Treatment"

Kiev, Avtomaticheskaya Svarka, No 2, Feb 72, pp 1-5

Abstract: The conditions under which the intersection of curves of stress-rupture strength and relaxation is conducive to fracture during heat treatment were investigated. Characteristics of the heat resistance of the initial metal and an imitated near-seam zone were determined on smooth and notched specimens of 15Kh1M1F steel normalized at 1050°C and tempered at 740°C. The results of short-term investigations at elevated temperature of fatigue strength and stress relaxation are analyzed. On the basis of experimental data and an analysis of the destruction process in the near-seam zone by creep, an outline for the development of fractures during heat treatment of welded joints is suggested. Fractures in the near-seam zone of welded joints of 15Kh1M1F steel can develop from stress concentrations which can be fractures, non-fusions, and sections of sharp transitions from the initial metal to the seam. Five illustration, nine bibliographic references.

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USSR

UDC 621.791.011

BRIDAVSKIY, M. S., ZEMZIN, V. N., PIGROVA, G. D., and DENYAINTSEVICH, S. V., Leningrad

"Heat Resistance of Nickel-Base Weld Seams"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 4, Jul-Aug 71, pp 117-123

Abstract: Data on the effect of molybdenum and tungsten on the heat resistance of nickel-base weld seams, suitable for long-time service at high temperatures, are absent in the literature, and for this reason the present investigation is devoted to determination of the optimum quantities of alloying elements from the view-point of long-time heat resistance and engineering strength of a nickel-base weld seam. Thirteen compositions, containing a varying amount of Mo (from 7 to 22%), including the compositions of IMET-10 and TsT-28 electrodes, were studied as well as compositions in which the niobium content changed from 1 to 1.7%. The welded metals were given the following designations: Kh15N60M7, Kh15N65M14V4 (TsT-28), Kh15N65M18, Kh10N65M22 (IMET-10), Kh13N50B, Kh15N70B2, Kh15NB2, MZh0, MZh2, MZh3, MZh4, MZh5, MZh8, Zh3, Zh6, and Zh8.

A nickel-base seam metal with added Mo possesses higher strength and better long-time strength than when alloyed with niobium. Optimum concen-

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